

## **1. ARMS CONTROL AND STRATEGIC SECURITY**

*(Also see topics 2.1, 2.15, 5.39, 5.42, and 6.5)*

### **1.1 What are the policy implications of raising or lowering the nuclear threshold?**

- How would you raise or lower the nuclear threshold?
- Under which circumstances would you raise or lower the nuclear threshold?
- Would the development of smaller-yield nuclear weapons make it easier/more likely to cross that threshold?
- Contrast today's threshold with the Cold War threshold (general nuclear war, vice limited employment scenarios).
- What would steps in a contemporary escalation ladder look like?

Priority: 1

Key Terms: escalation, redlines, tactical nuclear weapons, RNEP, HDBTs, nonproliferation, first use, limited nuclear war, nuclear effects, nuclear threshold

### **1.2 Examine the role of nuclear weapons within the new strategic triad: what are the roles, missions, and tradeoffs of nuclear weapons within the concept of global strike?**

- What are the tradeoffs of nuclear weapons versus advanced conventional weaponry? When can/should one be substituted for the other?
- Are there specific targets that require a nuclear weapon (hard and deeply-buried targets (HDBT), CBW facilities)?
- Should nuclear weapons be used in retaliation for CBW use?
- Is increasing reliance on conventional global strike marginalizing US nuclear weapons and undermining US nuclear deterrence?
- Does US conventional preeminence create unintended incentives for nuclear proliferation?
- Do today's non-nuclear force capabilities meet future deterrence requirements?
- What impact do the laws of armed conflict have on nuclear weapon employment in the post Cold-War environment?
- Discuss suggested changes to nuclear doctrine and/or roles and missions for nuclear weapons in the post-Cold War environment.
- What measures of effectiveness should be used in assessing tradeoffs among the different legs of the triad?
- Discuss or suggest possible force structure requirements that might better enable the US to expedite realization of the new Triad.
- What is the future of the ICBM force, the bomber force, the SSBN force?
- Explore the possible consequences of nuclear first-use by the US or some other nation or non-state actor.
- What might be the international political, diplomatic, and strategic responses to the first use of a nuclear weapon in combat?

- What are the arms control implications of dual-use long-range ballistic missiles? (I.e. common missiles delivering conventional or nuclear weapons?)

Priority: 1

Key Terms: PGMs, HDBT, CAV, nuclear missions, non-nuclear weapons, global strike, New Triad

### **1.3 How do we engage US allies (East Asia, Europe, Russia, and South Asia) in US missile defense programs and initiatives? (Also see topic 1.20)**

- What is their role in the US missile defense posture?
- How will the US missile defense concept be integrated into NATO's strategic concept?
- Examine case studies in cooperative missile defense systems, such as:
  - US-Israel and Arrow program
  - US-Germany-Italy and MEADS (Medium Air Defense System). Examine the "black box problem."
  - US-Russia and JDEC (Joint Data Exchange Center), TMDX.
  - US-Japan and sea-based TMD.

Priority: 1

Key Terms: missile defense, NATO and strategic concept, Arrow program, MEADS, JDEC, TMDX, cooperative missile defense

### **1.4 How can we deter non-state actors from using WMD? (Also see topic 1.18)**

- Are different policy instruments required for deterring states and non-state actors?
- Does state-sponsorship alter this equation? How?
- Is it practical for terrorists to acquire or employ sophisticated delivery systems, including ballistic missiles?
- Will missile defense deter terrorists from WMD acquisition and use?
- Is deterrence inherently idiosyncratic—that is, unique to each actor?

Priority: 1

Key Terms: non-state actors, WMD acquisition and use, deterrence, state-sponsored terrorism

### **1.5 How should the US integrate missile defenses into the operational warfighting plan?**

- As the United States proceeds to deploy ballistic missile defenses, how will those deployments impact the offense/defense relationship?
- What new or alternative measures of effectiveness for evaluating our missile defenses should be considered?
- To what extent can missile defenses offset offensive strike forces?
- In which ways do missile defenses become a liability?

- What additional operational requirements are imposed?
- Do multiple kill vehicles (MKVs) on US interceptors undercut the argument that US missile defenses are not meant to defend against China or Russia?

Priority: 1

Key Terms: offense-defense mix, missile defense, war plan, national defense strategy, MKV

## **1.6 How has the concept of arms control evolved as an instrument of United States national security?**

- Can we use arms control “lessons learned” from the Cold War to promote US regional objectives?
- Should the US review further adherence to existing arms control agreements?
- Now that the US is the lone military superpower, should we negotiate differently?
- Citing past examples, discuss potential impact of the duration and unintended consequences of arms control.
- Should the US promote new initiatives in arms control?

Priority: 1

Key Terms: review conferences, negotiating tactics, INF, START, Moscow Treaty (SORT), CFE, CWC, arms control

## **1.7 NPT 2005 Review Conference Impacts**

- Assess the effectiveness of the global nonproliferation regime
- Propose suggestions for improving supplier regimes
- Suggest a strategy for the US to assist other nations in rationalizing their national export control laws in an effort to standardize laws that apply to all states
- Suggest ways to improve international cooperation within the NPT regime.
- Reassess the “core agreement” within the NPT between nuclear weapons states and non-nuclear weapons states

Priority: 1

Key Terms: NPT Review Conference, Nuclear Weapons states, Non-nuclear Weapons States, Nuclear Suppliers Group

## **1.8 What is the impact of the Missile Technology Control Regime (MTCR) on:**

- International cooperation on missile defense programs
- How can the United States reconcile its nonproliferation goals with its missile defense priorities and the global war on terrorism?
- How does the United States resolve legislative conflicts between domestic export control legislation and regional security interests?

- Do we need to revisit how we interpret our MTCR obligations in the current security environment?

Priority: 1

Key Terms: MTCR, missile defense, export control, regional security

## **1.9 How will arms control agreements impact future aerospace operations and force structure?**

- Would START, INF, or other agreements, need to be modified to optimize conventional ICBMs, or other conventional alternatives?
- What would be the political, financial, operational, compliance, and implementation ramifications?
- Will existing agreements conflict with US policy regarding USAF doctrine for space?

Priority: 1

Key Terms: UAVs, CAVs, space weapons, conventional ICBMs/SLBMs, INF

## **1.10 Future of the INF Treaty**

- Have changes in the European security environment changed the implication for the withdraw of INF Treaty? If not, what changes in circumstances might suggest such action?
- Describe the impact of the INF Treaty since entry into force
- What criteria should be considered for evaluating the termination or continuation of the INF Treaty?
- What are the consequences for missile defenses, counter-proliferation, and conventional systems?

Priority: 1

Key Terms: Missile Defense, Pershing Missiles

## **1.11 How do existing arms control agreements limit the integration of advanced technology into modern operational concepts?**

- Discuss the impact of advances in technology on arms control agreements (e.g. UCAVs, hypersonic weapons, non-lethal weapons, air-launched cruise missiles) in relation to any of the following treaties and/or agreements:
  - CFE or the adapted CFE regime
  - START
  - CWC (e.g. relationship between the regime and non-lethal weapons)
- Explore and discuss the escalatory nature of advanced conventional weapons

Priority: 1

Key Terms: UCAVs, hypersonic weapons, non-lethal weapons, air-launched cruise missiles

**1.12 What options should we consider regarding the disposition of START in 2009?**

- Given that START is referenced in the Moscow Treaty, do we need to reconcile the gap between the 2009 end of the START treaty, including its verification provisions, and the 2012 implementation deadline of the Moscow treaty?
- Suggest and discuss alternatives to START verification provisions that may bridge the gap between 2009 and 2012.
- Assess the cost/benefit tradeoffs of the START implementation regime.

Priority: 1

Key Terms: START, Moscow Treaty, verification

**1.13 Open Skies Treaty**

- How does the US benefit from conducting observation missions in the Open Skies Treaty?
- Conduct a cost/benefit analysis of the Open Skies treaty regime.
- What might be some other cost effective alternatives to the Open Skies treaty?
- Has the implementation of the Open Skies Treaty met or exceeded the initial expectations of the treaty's negotiators?

Priority: 1

Key Terms: OSCC, OC-135

**1.14 What factors are shaping future alliances as a tool of US national security?**

- How legitimate are existing alliances, such as NATO?
- What roles will coalitions play in future US security strategy?

Priority: 1

Key Terms: alliances, coalitions of the willing, NATO

**1.15 What are Islamic attitudes toward the legitimacy of international law and international agreements? (See topic 5.9)**

- Do they differ from those of the West?
- If so, what are the implications for the potential success of arms control and other diplomatic means to address global security issues such as proliferation?
- If so, discuss the implications regarding adherence to the laws of war

Priority: 1

Key Terms: Islamic law, international law, multilateral regimes, LOAC, LOW

**1.16 How does the United States reconcile the global preference for legally binding regimes with our own desire for maximum flexibility?**

- Why do our friends, allies, and prospective negotiating partners prefer legally binding arrangements?
- What is the difference between a legally binding agreement and a politically binding agreement?
- Explore US national defense, political, future planning, and institutional needs for flexibility compared to desires to minimize legally binding constraints.
- In what ways can flexibility be built into legally binding treaties?

Priority: 2

Key Terms: strategic arms control, treaties, agreements, Moscow Treaty (SORT), PSI, international law

**1.17 What are the prospects for rogue states to develop solid-fueled versus liquid-fueled missiles?**

- What are the prospects for conversion of SCUD missile technology to ICBM-range missiles?
- Are there low-cost and low-technology cruise missile threats?
- What is the impact on US boost phase missile defense systems?

Priority: 2

Key Terms: ballistic missile, cruise missile, SCUD, ICBM

**1.18 Deterrence-related issues (Also see topic 1.4)**

- What does deterrence mean today?
- Who are we trying to deter?
- What are we trying to deter?
- What are the requirements necessary for deterrence to function?
- How do we define deterrence success/failure?
- What are the consequences if deterrence fails?

Priority: 2

Key Terms: deterrence, minimum deterrence, strategic deterrence, inter-war deterrence

**1.19 What benefits does the US derive from the Cooperative Threat Reduction (CTR) program?**

- Is the United States providing an indirect subsidy for Russian weapons programs?
- Has CTR proven of value overall? How do you evaluate the effectiveness of CTR?
- Are there alternatives to CTR that achieve the same end?
- Is CTR expandable to other countries, such as Pakistan and India?

- Is the CTR expandable to other arenas in addition to nuclear and CW programs, such as BW, or missile technologies, etc?

Priority: 2

Key Terms: cooperative threat reduction (CTR), Russia, United States

**1.20 What might be some additional opportunities for US-Russian missile defense cooperation? (Also see topic 1.3)**

- What can the Russians share with the US?
- What would we be willing to share/sell?
- What are the lessons learned from Russia's reaction to and US handling of the withdrawal from the ABM Treaty?
- What are lessons learned from other programs (e.g. RAMOS, JDEC)?

Priority: 2

Key Terms: Russian missile defense, ABM Treaty, missile defense

**1.21 What are the existing legal and political definitions of Weapons of Mass Destruction (WMD) and what are their implications for deterrence, arms control policy, and national security strategy? (Also see topic 2.1)**

- Should the US adopt a specific definition based on the emerging security environment?
- Should the definition be focused on US response, the WMD's effect, its consequences, and consequence management?
- What are the diplomatic, deterrence, and arms control implications of alternate definitions?
- What is a "nuclear" weapon? A nuclear reaction? How do thermal radiation, EMP, and absence of explosions figure into the definition?

Priority: 2

Key Terms: WMD, legal definitions, nuclear weapons

**1.22 What is the potential impact on regional stability and crisis management of deploying missile defenses in any of the following regions? (Also see topic 1.32)**

- India-Pakistan?
- Northeast Asia?
- Middle East (Syria, Israel)?
- China-Taiwan?

Priority: 2

Key Terms: missile defense, regional stability, crisis management

**1.23 What is an effective US stance toward those countries pressing for a space arms control regime? (Also see topic 1.33)**

- Explore various implications of the current US position: existing arms control agreements are adequate. “There is no space arms race.”
- If the US were to become the focus of a space arms control treaty. What might be the motivation for US participation?
- Are there parallels between space arms control and the law of the sea?

Priority: 2

Key Terms: space arms control, UNCOPUOS, law of the sea

**1.24 What effect does the US stance toward the Comprehensive Nuclear Test Ban Treaty (CTBT) have on achieving broader US nonproliferation goals?**

- Should the US pursue other nuclear test ban initiatives in place of the CTBT?
- Does the US continue to have a credible position in light of world events, in relation to a gradual approach to US nuclear weapons draw down and stringent proliferation controls?

Priority: 2

Key Terms: test ban, proliferation, NPR

**1.25 How important is cruise missile defense to future US security strategy? (Also see topic 2.15)**

- What is the status of existing cruise missile defense capabilities?
- What emerging technologies exist for cruise missile defense?
- What are the costs involved?
- Define the threat

Priority: 2

Key Terms: cruise missiles, missile defense

**1.26 What should the US response be to the resumption of nuclear weapon testing by another state?**

- Resumption of testing by a country that has already tested?
- Testing by a new proliferant?
- US rationale to test or conditions to allow testing?
- What circumstances would lead the US to test or not test a nuclear device?

Priority: 2

Key Terms: nuclear weapons, testing, proliferation



**1.27 What would be the international political, diplomatic, and strategic responses to the first use of a nuclear weapon in combat?**

- Possible consequences of first use of nuclear weapons by the United States or another state during peacetime or conflict
- Circumstances of first use effect and the international response

Priority: 2

Key Terms: nuclear weapons, first-use

**1.28 Are there confidence and security building measure issues in different regions where the US could play a third-party role?**

- Who should lead regional negotiations?

Priority: 2

Key Terms: CSBMs, regional conflict mediation

**1.29 What would be the usefulness of institutionalizing a strategic dialogue with China? What form would such a dialogue take?**

Priority: 2

Key Terms: strategic dialogue, Sino-American relations

**1.30 Has the US policy of restraint, regarding plutonium production, been followed by other states?**

- What actions should be taken regarding plutonium which has become available due to disarmament?
- Suggest and discuss ideas to improve the FMCT

Priority: 2

Key Terms: Plutonium, Nuclear reprocessing

**1.31 Is there a future for tactical nuclear weapons?**

- Can strategic nuclear forces replace tactical nuclear forces?
- Is this a requirement of NATO?
- Is there a remaining need for a sea based tactical nuclear capability?
- How can production policy and force size asymmetries between the US and Russia be resolved?

Priority: 2

Key Terms: SSBNs, SLBNs, START

**1.32 Missile defense systems in Asia (Also see topic 1.22)**

- What are the potential international implications
  - Of deploying missile defenses in Northeast Asia?
  - Of Japanese acquisition and deployment of missile defense systems?
- Explain the Japanese resolution of arms exports policies and their potential integration with US policies
- What are the potential reactions of China to a combined US and Japanese missile defense systems?

Priority: 2

Key Terms: Missile Defense Agency, Ship-based missile defense (SMD), Patriot Advanced Capability-3 (PAC-3)

**1.33 Treaty impacts for operationally responsive space (Also see topic 1.23)**

- What are the Congressional and legal restrictions on responsive launch systems (e.g., Falcon)?
- Are near space treaties in the national interests of the United States?
- Differentiate between outer space and air space
- What are the international sovereignty issues related to near space?

Priority: 2

Key Terms: Near space, Operational responsive spaces, Responsive launch systems, Falcon, CAV

**1.34 How have the requirements for managing post-Cold War nuclear crises evolved given contemporary trends in the international threat environment, such as the proliferation of WMD and ballistic missile technology?**

Priority: 3

Key Terms: WMD, proliferation, rogues states, terrorism

## **2. COUNTERPROLIFERATION AND FORCE PROTECTION**

*(Also see topics 1.4, 1.21, 1.25, 3.45, 4.39, 4.44, 5.46, 5.65, and 6.17)*

### **2.1 Assess current definitions of WMD and discuss whether they are adequate to capture current and emerging threats. (See topic 1.21)**

- What criteria should be considered when proposing a definition? (e.g. effects-based vs. threshold-based, political aspects, others?)
- Are some threats so distinctive they should be addressed separately? For example, should high yield explosives be combined with nuclear and with chemical (i.e., CBRNE) or is that not a useful definition?
- Should weapons of mass disruption be included in the definition? Why or why not?
- Are there technologies that might be captured by too broad of a definition that the US would not like to see denoted as WMD?
- What are the proliferation or legal implications of differing definitions?

Priority: 1

Key Terms: Weapons of Mass Destruction, WMD, CBRNE, definition, effects-based, threshold, high-yield explosives, weapons of mass effects, weapons of mass disruption

### **2.2 Examine the intersections between C-CBRNE, Force Protection, Homeland Security (HLS), and Homeland Defense (HLD); discuss the organizational stove-pipes and propose solutions to better leverage efforts.**

- Determine/define the intersections between relevant DoD organizations. What tools, expertise, CONOPs, and technologies do they employ?
- Discuss potential synergies and redundant efforts.
- Conduct a gap analysis to determine how C-CBRNE could be better integrated into Force Protection, Homeland Security and Homeland Defense.
- Are there different implications for peacetime vs. wartime in terms of organizational lines of authority for C-CBRNE?

Priority: 1

Keywords: Force protection, CBRNE, Homeland Security, HLS, Homeland Defense, HLD, organization, tools, expertise, CONOPs, technologies, peacetime, wartime, stove-pipes

### **2.3 Assess how the DoD and the wider community is organized to support the S&T needs related to C-CBRNE.**

- Identify C-CBRNE S&T organizations and activities.
- Identify S&T shortfalls and duplications of effort. Propose solutions to cover shortfalls and avoid duplication of effort in S&T. (e.g. the development of a forum for national labs & DoD, a single oversight body)
- Examine the role of private industry in C-CBRNE S&T activities. Is there potential for increased collaboration?
- Discuss approaches to identifying new areas/ideas for C-CBRNE S&T.

Priority: 1

Key Terms: Science, technology, S&T, national labs, DoD, shortfalls, duplication of effort, organization

## **2.4 What are potential new or emerging WMD technologies?**

- What are the leading edge technologies (nanotech/MEMS, advanced energy systems and devices, high powered microwaves, new WMD technological advances in delivery systems: small, smart, autonomous, air, undersea, land) that could be utilized as weapons of mass destruction?
- How should new bio-engineered threats be identified, registered, and tracked?
- How or should other technologies be registered or tracked?
- What are the leading edge therapeutics that could be used as weapons?
- Propose methodologies for determining what could be used as a weapon. List criteria, if applicable.
- How should policy implications be determined?
- Inventory/survey NIH/medical community efforts and apply them to DoD policy.
- How should policy be developed to respond to advanced, unknown genomic threats?

Priority: 1

Key Terms: technologies, nanotech, MEMS, energy systems, microwaves, weapons of mass destruction, WMD, delivery systems, bio-engineering, therapeutics, National Institutes of Health, NIH, emerging weapons, lasers, non-lethal weapons

## **2.5 With technology making it easier for nations to acquire a nuclear capability (due to higher yields, dispersion of fissile materials), analyze ways to prevent the auto-catalytic proliferation of nuclear weapons.**

- How should the intelligence and technical communities be integrated to detect latent nuclear capabilities? What changes should be made in current practices?
- What are the policy implications for the USAF in stemming proliferation? What are the legal implications?
- What are the optimal pressure points or incentives to prevent nations from wanting to acquire a latent nuclear capability?
- Under what circumstances are nonproliferation regimes effective? When have they failed?
- Discuss the role of multilateral frameworks and the United Nations.
- Discuss the impact of verification measures.

Priority: 1

Key Terms: Nuclear weapons, intelligence, technical, capabilities proliferation, nonproliferation, multilateral framework, United Nations, verification

**2.6 Assess challenges regarding operations following a Radiological Weapon (RW) event.**

- What are the risks? What actions should be taken?
- Discuss how to conduct operations through a radiological weapons event.
- How does C-RW differ from C-BW and C-CW in terms of tactics, techniques and procedures?
- What are the basic facts a commander should know about RW?
- What are new areas for radiological weapons research? How can the disruptive effect of RW be minimized?

Priority: 1

Key Terms: Commanders' guidelines, radiological weapons, RW CONOPs, dose thresholds, medical management of radiated casualties, ionizing radiation

**2.7 Examine the Air Force role in the Proliferation Security Initiative (PSI) interdiction mission. (Also see topic 5.46)**

- Discuss how the Proliferation Security Initiative applies to the USAF. What capabilities does the USAF require to conduct an aerial interdiction or support ground/maritime interdiction?
- What are the current USAF shortfalls in terms of organize, train, and equip to support these missions?
- Propose Rules of Engagement for aerial interdiction of CBRNE materials, technology, or expertise? What are key considerations in formulating TTPs for this mission?
- Discuss the legal implications of aerial interdiction.
- The researcher may choose to use case studies of lessons learned in the war on drugs, enforcing no-fly zones, maritime interdiction, or other aerial interdiction.

Priority: 1

Key Terms: Proliferation Security Initiative (PSI), capabilities, equipment, policy, ROE, aerial interdiction, drug war, no-fly zone, maritime interdiction, WMD interdiction, case study

**2.8 Examine the CBRNE/force protection implications of a total force—that includes Reserve, Guard, civilians, and contractors. (Also see topic 5.1)**

- Who should be considered essential personnel? By what criteria should designations be made?
- How can the USAF better integrate Reserve, Guard and contractor/civilians to ensure they are prepared to operate in a CBRNE or high threat environment?
- What functions should/should not be outsourced due to CBRNE or high threat environments? Discuss the political and legal implications of outsourcing.
- How should this issue apply to third country nationals?

- What are the primary considerations for commanders when making decisions about protecting civilians from CBRNE effects?
- What are the legal implications for protecting non-military personnel? (e.g. vaccination, protective gear, training.)

Priority: 1

Key Terms: Mission essential personnel, total force, contractor integration, military outsourcing, force protection, Reserve, Guard

**2.9 Perform a case study on Request for Forces (RFF) approach used in Operation IRAQI FREEDOM (OIF) versus the historical time-phased force deployment data (TPFDD) process. Was the RFF approach successful in placing the appropriate counter-CBRNE (C-CBRNE) capabilities in theater? Include an examination of alternatives, such as pre-positioning. Also, examine the impact on aerospace expeditionary force (AEF) organization.**

- How can the USAF provide the greatest C-CBRNE defense capability for the least TPFDD impact?
- Did the absence of a time-phased approach reduce visibility into arriving resources?
- How should planners best integrate all of the USAF's C-CBRNE capabilities in the AEF?
- How should C-CBRNE capabilities be prioritized? How should planners adjust for a specific location?
- What role can pre-positioned forces play?

Priority: 1

Key Terms: Deployment, time-phased force deployment data (TPFDD), C-CBRNE defense, aerospace expeditionary force, AEF, pre-positioning, C-CBRNE capabilities, Operation Iraqi Freedom, Iraq, Request for Forces (RFF), DEPORDS

**2.10 Examine the impact of quarantine on military operations.**

- Can a commander carry out effective operations while adhering to quarantine requirements?
- What information is needed to evaluate risks and benefits of continued operations?
- What are the legal and logistics ramifications of imposing quarantines? Identify the limits of the commander's authority to impose quarantines.
- Examine lessons learned from quarantines imposed during the spread of Severe Acute Respiratory Syndrome (SARS)? Discuss the implications of the successes and shortfalls on military operations.
- What are the key points in making the decision to impose quarantine (numbers, extent of contagion, mission impacts, legal impacts on communities and host nations)?

Priority: 1

Keywords: Biological warfare, biological defense, Severe Acute Respiratory Syndrome, SARS, quarantine, contagion, restriction of movement, host-nation agreements on restriction of movement, civil authorities, civil support, DoDD 6200.3 *Emergency Health Powers on Military Installations*

**2.11 Was the USG effectively organized, equipped, and resourced to locate, identify, and eliminate weapons of mass destruction (WMD) in Iraq after the war?**

- What changes does the DoD need to make in terms of intelligence, training, organization, and expertise?
- What are the legal implications of WMD elimination?
- What are the requirements for a standing WMD elimination capability? Assess the feasibility of such a capability.
- What are the political implications of WMD elimination in regard to dual-use materials, especially in a situation such as Iraq?
- Should these missions be conducted within a multilateral framework? What is the role of the United Nations?

Priority: 1

Keywords: WMD, WMD elimination, threat reduction, dismantlement, inspection regime, Iraq, Operation Iraqi Freedom, United Nations, International Atomic Energy Agency

**2.12 Passive defense and force protection at Joint and Combined Operations bases pose significant operational challenges for commanders. Resolving many of these challenges will require a new approach to passive defense/force protection operations.**

- How should the USAF handle Allies/Coalition/US Joint Forces that are not at the same level of readiness? Should the USAF provide them with equipment, medical supplies, or collective protection?
- How should we train/exercise Joint/Coalition Forces to operate in a CBRNE environment?
- The researcher may want to conduct a case study analysis (e.g. examine Joint operational experience in the Gulf War or OIF)

Priority: 1

Key Terms: Force protection, passive defense, Joint, Allies, doctrine, civilian, military, CBRN, force protection, operations, fixed-site, doctrine, policy, coalition, biological warfare.

**2.13 Examine aero medical evacuation policies in a contaminated environment.**

- What are the national policies on medevac of contaminated patients or remains?
- What is the capacity for the evacuation of contaminated patients?

- What are the requirements for noncombatant evacuation operations (NEO)? What are the political/legal ramifications for the evacuation of contaminated civilians?
- Is there a medical evacuation requirement? Is there a mobile medical unit requirement?
- Investigate the potential for medical CRAF (Civil Reserve Air Fleet) in the event of a contaminated casualty surge—would CRAF provide back-flow from theater?
- What modalities are necessary?
- How should levels of decontamination be determined prior to transport?
- Are there case studies for comparison?
- What are the work-arounds in lieu of transporting?

Priority: 2

Key Terms: aero medical evacuation, BW, contamination, mobile medical unit, med evac, Civil Reserve Air Fleet, decontamination, case study, transport, work around

#### **2.14 What are the proliferation implications for transnational Chemical/Biotech corporations?**

- Should, and if so, how should materials and expertise transfers within/between multinational companies be monitored?
- Identify potential areas of proliferation concern in regard to transnational corporations.
- Examine dual-use export control legislation and multilateral agreements. Assess their implications for transnational corporations. Identify areas for improvement in these regimes.
- What are the strategies to identify and track dual-use technology in this context?

Priority: 2

Key Terms: Proliferation, transnational corporation, technology transfer, dual-use technology, export controls, biotech, chemical industry

#### **2.15 Examine cruise missiles as WMD delivery vehicles. (Also see topic 1.25)**

- How likely are cruise missiles to be used as delivery vehicles for chemical or biological weapons?
- What is the threat? How would they be used? Who has the capability to use cruise missiles as WMD delivery systems?
- Consider the political and military implications of their use or threat of use.
- What are their advantages (assess cost, accuracy, etc.)? What are their limitations? Would payload survive delivery (examine environmental stresses)?
- Are there means to address the proliferation/development of cruise missiles to deter their use as WMD delivery vehicles?
- What are effective countermeasures against them? Identify cutting edge technologies that could be employed to counter the threat.



Priority: 2

Key Terms: Cruise missile, WMD, delivery vehicle, payload survival, countermeasures

**2.16 Examine the commercial UAV threat and potential countermeasures.**

- What is the threat? How might an adversary use commercial UAVs as a warfighting weapon or weapon of terror? Combined with CBRNE?
- What role might the USAF be assigned or how can it contribute to defending against UAVs? What are effective countermeasures against them?
- Identify the key issues regarding UAV delivery of chemical or biological weapons (CBW). Which countries or groups might have the capability to use them as CBW delivery systems?
- How is it possible to regulate UAVs? Assess the extent to which current domestic and international flight regulations apply to UAVs.
- Would proliferation prevention measures be effective against this threat? Why or why not?

Priority: 2

Key Terms: Unmanned Aerial Vehicle, UAV, CBW delivery, International Civil Aviation Organization, ICAO, Federal Aviation Administration, FAA

**2.17 Examine the role of security forces in C-CBRNE operations.**

- Do security forces have distinctive responsibilities?
- Do their capabilities match their requirements?
- What kind of threats should security forces be responsible for in expeditionary situations?
- What equipment, technology and training do they need?
- What measures can be taken to improve the role of security forces in C-CBRNE operations?

Priority: 2

Key Terms: Security forces, CBRNE, expeditionary, equipment, technology, force protection, full spectrum threat response, integrated base defense, integrated base defense security systems, explosives detection, high-yield explosives, improvised explosive device

**2.18 Examine the lessons learned from Department of Defense (DoD) vaccination programs. How can these lessons apply in the future?**

- Review the recent vaccination programs. Analyze differences in policy in the continental United States (CONUS) and outside the continental United States (OCONUS).
- How can policy be enforced? Who should receive compulsory vaccinations? Who should be provided vaccinations on a voluntary basis?

- Examine similar Allied/Coalition programs. Explore how host nation programs might affect US forces.
- What can be done in the long term (acquire more vaccines; redirect resources dedicated to vaccine acquisition to other BW preparation methods)?

Priority: 2

Key Terms: Vaccines, vaccination program, compulsory vaccination, voluntary vaccination, biological warfare, biological defense, Allies, medical records, acquisition, commanders, anthrax, smallpox

**2.19 How should the DoD develop and implement standards for thorough decontamination (unrestricted, unprotected use of a previously chemically and/or biologically contaminated asset)? These standards should take account of implications for long-term personnel exposure, military or civilian re-use of the equipment, and reconstitution of the force structure. (Also see topic 3.45)**

- What are the important considerations in developing criteria?
- When can a contaminated asset be used without mission-oriented protective posture (MOPP) gear?
- What is the policy for returning a previously contaminated asset to CONUS?
- How will Allied concerns affect standards or policymaking?

Priority: 2

Key Terms: Decontamination, chemical, biological, policy, guidance, implement, contaminated, personnel, exposure, civilian, equipment, force structure, Allies, mass casualties

**2.20 Identify “best practices” used by other nations in addressing C-CBRNE.**

- Are best practices applicable to US operations? Which can be adopted for use by the US?
- The researcher should examine how Allied forces interact with their local civilian populations when responding to a CBRNE incident.
- The researcher should focus on countries that have extensive experience with readiness for C-CBRNE operations (e.g. Israel, United Kingdom).

Priority: 2

Key Terms: Best practices, passive defense, consequence management, Allies, fixed-site operations, CONUS, doctrine, counterterrorism, civilian, civil-military operations, civil affairs, civil support, force protection, operations, fixed-site, doctrine, policy, Allies, coalition, biological warfare, homeland defense, homeland security, CBRNE, CONOPS

### **2.21 Examine force protection engineering standards.**

- Evaluate current DoD new facility construction standards from a CBRNE threat perspective.
- Are there comprehensive DoD standards to guide design engineers for all types of facilities and levels of risk and acceptable vulnerability?
- How current and relevant are the existing new construction or renovation standards to today's CBRNE and terrorist threats?
- Are the current "best practices" in antiterrorism and force protection incorporated in the DoD building standards/codes? If not, posit recommended standards based on researched best practices.
- What formal risk/vulnerability assessment process is undertaken to determine if a new facility requires special CBRNE measures and is that assessment updated throughout the design/construction life cycle? Assess review requirements.

Priority: 2

Key Terms: Installation force protection, building design, construction, engineering, building codes, CBRNE, standards

### **2.22 The DoD has undertaken a major effort to transform its structure, operational capabilities and business practices to align better with the security environment it perceives will exist in the first few decades of the 21<sup>st</sup> Century. Capabilities-based planning forms a key element of that transformation. Examine how capabilities-based planning and transformation affect C-CBRNE planning.**

- How do the principles guiding DoD transformation apply to C-CBRNE efforts?
- What transformation practices and principles have been applied to the C-CBRNE challenge?
- What is the connection between our CBRNE vulnerabilities, capabilities-based planning, and DoD transformation efforts for C-CBRNE planning?

Priority: 3

Key Terms: Capabilities, planning, transformation, C-CBRNE, vulnerabilities

### **2.23 Identify ways to assess CBRNE, Force Protection, or nuclear security effectiveness using a performance-based methodology instead of the traditional compliance based standards. (Also see topic 2.26)**

- Are the current compliance-oriented security and force protection standards adequate given the dynamic threat environment? What are their strengths and shortcomings? Do they portray an accurate picture of the effectiveness of security forces and systems?
- Survey existing inspection reports and analyses for their assessments of the suitability of current evaluation methods.
- Could a quantitative, performance-based methodology be developed that better represents the true effectiveness of CBRNE or security capabilities?

- How might DoD or the Air Force transition from the current compliance-based system to a more performance oriented evaluation system?
- What are the essential performance elements that must be considered in a performance-based methodology?
- Can factors like leadership, communications effectiveness, human factors (e.g. fatigue, experience), and the environment be adequately captured and portrayed as part of a performance methodology that is reliable and repeatable?

Priority: 3

Key Terms: CBRNE, force protection, readiness, standards, performance-based, leadership

**2.24 Survey and capture recent exercise and wargaming threat scenarios for access denial and terrorism where WMD are employed. Identify significant scenarios that are lightly played and develop alternative and innovative scenarios for future consideration.**

- Conduct a survey of past scenarios.
- Describe how a library of threat scenarios might be developed, maintained, and accessed by exercise or game developers.
- Identify significant trends/areas of omission in WMD scenario development.
- What are the sources and differentiators of WMD scenarios and how have they played out?
- Are all important elements of a WMD threat scenario adequately addressed in the current scenarios?
- Brainstorm and develop some innovative WMD threat scenarios that have not been well addressed but merit analysis and game play.

Priority: 3

Key Terms: Scenarios, access denial, weapons of mass destruction, WMD, force protection, UAV, case study, wargaming, terrorism, CBT simulators

**2.25 Assess the role of global arms sales patterns in contributing to proliferation.**

- Examine emerging trends in arms sales (including US arms sales).
- Assess post-sale controls on US arms sales and weapons technology transfers. Is it possible to prevent/limit re-transfer?
- Examine international and domestic legislation governing the sale/transfer of arms. Are there disconnects or shortfalls?
- Is there evidence of international cooperation among major arms supplier states (US, Russia, China, and Israel)? Are there currently incentives to cooperate to regulate sales/transfers?
- Do other arms producing countries indicate strategies specifically targeted against US interests in their sales/transfers?
- Examine the impact of unregulated arms sales/transfers by rogue states and non-state actors.

Priority: 3

Key Terms: Arms sales, proliferation, technology transfer, arms suppliers, US, Russia, China, Israel, regulating arms sales, post-sale controls, unregulated arms transfers, rogue states, non-state actors, United Nations Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms

**2.26 Survey CBRNE vulnerability and mitigation strategy assessment tools. (Also see topic 2.23)**

- Identify the various vulnerability assessment tools across DoD agencies and organizations.
- What current and emerging threats do they address?
- Do shortfalls in assessment tools exist? Are there redundancies?
- Can vulnerability and mitigation tools be combined into more powerful tools?

Priority: 3

Key Terms: Vulnerability, mitigation, strategy, assessment tools, emerging threats

**2.27 Examine S & T advances that may have relevance for improved force protection.**

- What advanced technologies (e.g. materials, IT, sensors, communications, etc.) have the potential to make substantial contributions to force protection against existing and potential CBRNE threats?
- Conduct a literature survey and expert interviews to identify relevant S&T research and development at universities, national laboratories, and industry.
- Identify existing USG programs to promote innovative technology development for force protection.
- Look for programs of cross fertilization between DoD and DHS.

Priority: 3

Key Terms: S&T, science and technology, advanced technologies, innovation, force protection, CBRNE

**2.28 Standard Operating Procedures (SOPs) for CBRNE responses.**

- Assess base-wide SOPs to identify best practices in countering CBRNE threats (e.g. food handling, medical practices, physical security, etc.). Note any shortfalls and inconsistencies.
- Identify and examine one or two case studies for lessons learned (e.g. Aum Shinrikyo sarin attack in Tokyo, SARS in the US and Hong Kong, Anthrax and the Hanta virus in the US). Indicate best practices that could be applied to bases. Identify impediments to adoption, if any.
- Which responses are applicable to CW, but not to BW (e.g. doffing masks, shelter in place, etc.)?

Priority: 3

Key Terms: Standard Operating Procedures, SOP, CBRNE, Aum Shinrikyo, Sarin, Tokyo subway, lessons learned, SARS, Severe Acute Respiratory Syndrome, de-mask, doffing, shelter in place

**2.29 Examine implications of new US national strategies (e.g. National Bio-Defense Strategy, National Strategy to Combat WMD, National Military Strategy, etc.) for their implications for USAF plans and operations.**

- Identify pillars and principles guiding current strategies. What areas of strategy require clarification?
- Identify strategy-CONOPS gaps, if any.
- Identify strategy-resource gaps, if any.
- Determine the potential impact of these strategies on the USAF programs and operations.
- Identify areas in which USAF doctrine may require change.

Priority: 3

Key Terms: National strategies, bio-defense strategy, National Security Strategy, National Strategy to Combat Weapons of Mass Destruction, gap analysis, operations, impact

### **3. HOMELAND DEFENSE AND COMBATING TERRORISM**

*(Also see topics 1.15, 2.2, 2.7, 2.13, 2.18, 2.19, 2.24, 4.7, 4.25, 4.35, 4.36, 4.37, 5.12, 5.17, 5.22, 6.1, 6.2, 6.12, and 6.30)*

#### **3.1 Whither a National Strategy for Combating Terrorism? (Also see topic 3.30)**

- Compare the National Strategy for Combating Terrorism (NSCT) and the DoD National Military Strategic Plan for the War on Terrorism (S) for consistency.
- Examine the roles and missions specified in these two documents: are they sufficient to guide the US CT effort?
- Review current authorities and responsibilities for the CT effort and recommend changes as appropriate.

Priority: 1

Key Terms: strategy, combating terrorism, interagency, National Strategy for Combating Terrorism (NSCT), National Military Strategic Plan for the War on Terrorism (NMSP-WOT) (S)

#### **3.2 Do US government definitions of Homeland Defense (HD) and Homeland Security (HS), as reflected in current strategies, generate clear expectations regarding DoD and DHS respective roles and missions?**

- Are there ambiguities and overlaps between DoD and DHS roles and missions?
- What is the operational effect; e.g., are there important overlaps and/or seams between HD and HS activities?
- Are steps needed to clarify these roles and missions? If so, make appropriate recommendations.

Priority: 1

Key Terms: homeland defense, homeland security, definitions, expectations, roles and missions, DoD, DHS

#### **3.3 Conduct case study of overlaps/seams in HD and HS activities**

- Pick a specific case, e.g., Navy v. the Coast Guard for maritime interdiction operations.
- What differences, if any, do overlaps make?
- Where problems exist, are operational solutions readily available?
- How can we best ensure unity of effort?

Priority: 1

Key Terms: case study, overlaps, seams

**3.4 How best can US Northern Command integrate into the Homeland Security Presidential Directive (HSPD) mandated DHS National Bio-surveillance Integration System (NBIS)?**

- Which computer systems/programs are adequate for integrating multiple, disparate data streams, both medical and non-medical?
- Which traditional and non-traditional data systems are vital to a functional NBIS?
- Which non-medical data streams might be medically relevant to NBIS?
- Which near-term surveillance technologies should be aggressively funded to enhance homeland defense and homeland security surveillance capabilities?
- How best to train medical intelligence analysts?

Priority: 1

Key Terms: Bio-surveillance, medical/veterinarian intelligence, Department of Homeland Security, Inter-agency effort, training, collection of homeland defense information, HHS

**3.5 What is the best approach to broaden and deepen HD cooperation with Canada and Mexico? (Also see topic 3.57)**

- Is NORAD a useful example or a potential problem?
- Should we stress a multinational approach or focus on bilateral relations?
- Can we effectively address HD concerns, for example, through the security agenda of the new US-Canada-Mexico Security and Prosperity Partnership?
- What other alternatives should be considered, e.g., build on NAFTA, OAS?

Priority: 1

Key Terms: NAFTA, Security and Prosperity Partnership, Canada, Mexico, NORAD

**3.6 What is the threat posed to CONUS by the current flow of special interest aliens (SIA) across the national borders and what can USNORTHCOM do to counter the threat to our national security?**

- What is the extent of the threat?
- What can USNORTHCOM do to assist in countering the threat?
- What are the legal issues associated with this question?
- How does this relate to SOCOM's role?

Priority: 1

Key Terms: N/NC J2, intelligence, threat

**3.7 Should Canada and the United States pursue a treaty or agreement for bi-national Maritime Domain Awareness (MDA)? (Also see topics 3.8, 3.33)**

- Canadian Forces (CF) and Other Government Agencies (OGA) such as Transport Canada have a responsibility for Maritime traffic as does the Department of Homeland Security (DHS), the US Coast Guard (USCG), and the US Navy (USN).



Should all stakeholders pursue a common operational picture of MDA for both defense and security missions?

- Assess Public Safety and Emergency Preparedness Canada (PSEPC), DHS, USCG, and USN technical capabilities with regards to maritime intelligence, surveillance, and reconnaissance (ISR).
- Assess PSEPC, DHS, USCG, and USN interoperability from a plans, process, and procedural perspective.
- Ascertain the Canadian public reaction to bi-national MDA initiatives.

Priority: 1

Key Terms: Canada, United States, Maritime Domain Awareness (MDA)

### **3.8 What are the potential issues and impacts of NORAD's adoption of maritime roles? (Also see topics 3.7, 3.33)**

- What current practices and capabilities contribute to a maritime common operational picture (COP)?
- What are the bi-national and interagency maritime issues and concerns that must be addressed?
- How can NORAD best achieve bi-national and interagency maritime coordination and integration? What role can/should NORTHCOM play?
- What are the required NORAD national and bi-national maritime mission sets?
- What maritime capabilities and forces are required, and under what command and control arrangements?

Priority: 1

Key Terms: NORAD maritime; Canadian Naval Forces; Canadian NDHQ, US Navy, US Coast Guard; maritime weapons of mass destruction (WMD) detection; maritime surveillance, warning and information sharing

### **3.9 How can we improve interoperability in command, control, communications, and computer systems to support the Canadian and US transformation strategies, which include a focus upon greater interoperability and network centric warfare (NCW), to protect our vulnerabilities to our economies, security safety and environment (what information should be shared and can be shared)?**

- Should secure and redundant communications be established between all Canadian Forces and USNORTHCOM operations centers?
- Should secure and redundant communications networks be established between Public Safety and Emergency Preparedness Canada (PSEPC), Department of Homeland Security (DHS), the Canadian Forces and US military?
- Determine what technical changes would enhance interoperability between Canadian and US active and reserve component forces for defense of North America. (i.e., Should specific bandwidths be reserved for Canada/United States (CANUS) operations in support of defense and civil support operations?)

- What non-technical protocols could be implemented to assist in military transformation from a bi-national perspective?

Priority: 1

Key Terms: Canada, United States, transformation, network centric warfare

### **3.10 Examine Federal v. State Responsibilities for Public Safety and Security**

- Both the Federal Government and state governments are responsible for public safety and security
- Since 9/11, the line between the Federal Government's responsibilities and those of state governments is even more ill-defined
- The purpose of this study would be to
  - Examine Federal Government and State Government responsibilities, as defined by statute and regulation
  - Identify redundancies or seams between these responsibilities
  - Assess and compare Federal Government and State Government expenditures on public safety and security – focused on homeland security – in light of their statutory and regulatory responsibilities and identified redundancies and/or seams

Priority: 1

Key Terms: federal government, state government, public safety, roles and responsibilities, overlaps, seams

### **3.11 Should the DoD fund Civil Support Teams (CSTs)?**

- Currently, by law, Weapons of Mass Destruction – Civil Support Teams are funded and certified by the Secretary of Defense and under the operational control of the governors of the states (Title 32, U.S.C.)
- In accordance with Sec. 1403 of the Bob Stump National Defense Authorization Act for Fiscal Year 2004 (PL 107-314), the number of WMD-CST will be 55, one for each State and Territory, including two for the state of California.
- The purpose of this study would be to:
  - Examine and assess the history of the establishment and expansion of the WMD-CST
  - Compare the costs, advantages, and disadvantages of continuing the status quo (DoD-funded with National Guard personnel) and a civilianized WMD-CST (Federally-funded – possibly funded with National Guard personnel) and a civilianized WMD-CST (Federally-funded – possibly by DHS – with civilian personnel)

Priority: 1

Key Terms: civil support teams (CST), national guard, military-civilian relationship, Title 32

**3.12 What is the optimal configuration of state level and National Guard ops center to share information and situational awareness? (Also see topics 3.59, 3.60)**

- What is the minimum requirement to efficiently communicate with DOD and interagency groups during crisis response?
- What systems are currently resident within each State's National Guard that can be used in this communications architecture?
- What is the cost vs. benefit of using one recommended system over another for existing communication gaps?
- What are the current capabilities, e.g. secure, non-secure and protected (voice, SIPR, NIPR, VTC, etc)?
- What is the anticipated footprint for teams and forces within each Ops Center for WMD events? (Include: CBRNE Enhanced Response Force Packages, Reaction Forces, Civil Support Teams, Public Affairs, JTF watchstanders and State Directors in the response)?
- What should be the command and control center's system configuration?

Priority: 1

Key Terms: NIPR, SIPRNET, National Guard, Crisis Response, Ops Center, SJFHQ-N

**3.13 Intelligence Sharing (Also see topic 3.63)**

- Interservice, intra-agency, interagency, international (e.g., Canada and Mexico, coalition partners)
- Assess post-9/11 intelligence reform – is it solving the problem?
- Releasability dates and overclassification.
- At the local level – sharing with law enforcement, medical personnel, etc.
- What could be some procedural solutions for better information sharing within and outside of the DoD?
- What are possible legal or cultural roadblocks with sharing information between agencies and the DoD that may impede senior level decision-making?
- How can we maintain assured, seamless, and interoperable voice, video, and data connections with coalition and interagency partners across security domains?

Priority: 1

Key Terms: intelligence sharing, interagency, intelligence reform, law enforcement, civil authorities, interoperability, data, security domains

**3.14 Information sharing for warning and crisis management**

- Examine the processes by which USG provides actionable intelligence in a policymaking, legal, and operational context to enhance the quality, timeliness, and quantity of decisions.
- Address how the organization of these communities influences decision making outcomes.

- Do recent insights from sociology and economics suggest a need for improvements in both process and organization for warning and crisis management?

Priority: 1

Key Terms: intelligence, information sharing, senior leaders, warning, organization, process

### **3.15 How do we measure how well NORTHCOM is performing its mission in deterring, detecting, preventing and defeating clandestine attacks?**

- What are the primary alternative approaches to determine measures of effectiveness for the NORTHCOM mission areas of deterring, detecting, preventing, and defeating clandestine attacks?
- What lessons can be taken from other agencies/mission sets (e.g. Cold War deterrence, counter-drug operations; FBI counterterrorism)?
- How do other combatant commands assess their mission requirements and effectiveness in similar areas?

Priority: 1

Key Terms: Measures of effectiveness

### **3.16 What are the implications for DoD of mass-casualty terrorist attacks, including at casualty levels well beyond current planning?**

- What will the US public and Congress expect of DoD?
- Develop specific scenarios and determine likely requirements for DoD support.
- Conduct survey of current DoD and other federal capabilities.
- If DoD is directed to provide maximum support, would DoD become the Lead Federal Agency (LFA)? What would be the likely effect on DoD capabilities for other operations?
- What are the implications for DoD planning and programming?
- What is a reasonable casualty threshold for planning?
- When and under what conditions should DoD transition its responsibilities to civil authorities?

Priority: 1

Key Terms: mass-casualty, planning, civil authorities, federal

### **3.17 What is the acceptable risk in conducting CBRNE remains recovery and processing? (Also see topics 3.46, 3.47)**

- Explore difference in Military code of "leave no service member behind" (also seen in WTC post 9/11) vs. generally accepted Mortuary Affairs principle of "we will not risk the living for the dead."
- At what point is the value of recovering the dead greater than the health risk to mass fatality management personnel?

- How do we determine the level of health risk to mass fatality management personnel?
- How do political, social, cultural, religious, media, legal, medical and operational factors influence the decision process?

Priority: 1

Key Terms: Risk Assessment, mass fatality management, CBRNE remains recovery and processing

**3.18 How do we integrate the DOD Family Assistance Centers (FAC) with the local community social, medical and nongovernmental organization assets?**

- Is it best to keep separate military and civilian FAC's?
- What are the limitations of military personnel in a joint civilian/military operation?
- What are the funding issues?
- Is there equal service and treatment provided at the FAC's?
- Are there key differences between the civilian and military operations?
- Are there policy barriers?
- What is the best form for the post incident Family Assistance Center's for both the military and civilians?

Priority: 1

Key Terms: Family Assistance Centers, equal treatment, joint civilian/military operations

**3.19 What are the most effective techniques and protocols for protecting hospitals against introducing CBRN contaminants during post attack operations?**

- How effective are current hospital practices against potential contamination?
- Do all hospitals have some sort of planning for these events? What are the potential funding sources to support these plans?
- What are the best case practices for prevention of CBRN contamination in hospital environments?
- What are the potential risks to patient throughput by implementing various contamination avoidance Tactics, Techniques, and Procedures (TTPs)?
- What are the potential advanced detection technologies that can be employed to facilitate these protocols?

Priority: 1

Key Terms: Advanced CBRN detection technology, hospitals, post attack environment, patient throughput

**3.20 What are the psychological effects of a terrorist attack?**

- What habits or activities increase or decrease after a terrorist attack against civilian targets?

- Does the current exposure to violence in media make the US population less sensitive to these effects (increases/decreases in habits and activity)?
- What readily available sources of polling data reflect these trends?
- What factors allow people to maintain their baseline levels of faith and confidence in their government during periods of increased terrorist attacks? How to deal with issues regarding return to employment?
- How can we accomplish education as inoculation?
- What are the long term effects on the post-9/11 generation?
- Has DHS studied this issue?

Priority: 1

Key Terms: Terrorist effects, government, psychological, behavioral psychology

**3.21 What is a useful framework for understanding and evaluation the chemical, biological, radiological, nuclear, and enhanced explosives (CBRNE) threat from a red force (adversary's) capabilities perspective?**

- What are the differences between capabilities-based and threat-based assessments?
- Which type of assessment offers the best analysis in current/future operating environments?
- What are the key dimensions/attributes for measuring risk, and how should they be defined and measured?
- What research methodology would produce a confident assessment for planning purposes?
- How would/should a strategic risk assessment affect policy formulation and resource allocation?

Priority: 1

Key Terms: Capabilities-based

**3.22 Identify and assess adversaries' concepts related to Nuclear, Biological & Chemical (NBC) and radiological weapons use.**

- Select a region, nation, or non-state actor and describe its potential for employment of NBC or radiological weapons.
- Consider the political and military purposes of use or threat of use.
- Analyze an adversary's internal political-military dynamic (leadership), rhetoric or stated doctrine, and historical use (if any).
- How likely is an adversary to use NBC or radiological weapons or devices? How can the U.S. deter state and non-state actors from using such weapons? Are current counterproliferation operations an effective deterrent against the use of NBC devices by state or non-state actors?

Priority: 1

Key Terms: adversaries, NBC, radiological, U.S. response, historical use, adversarial use of NBC, deterrence, terrorism, state actor, non-state actor

**3.23 What are the Centers of Gravity (COG) associated with homeland security (HLS) and homeland defense (HLD)?**

- Does the United States have a National COG? What must the nation do to protect that COG?
- Does designating a National COG help synchronize the application of the instruments of National Power DIME (diplomatic, informational, military, economic)?
- What is/are the Military COG(s) associated with HLD?

Priority: 1

Key Terms: Center of gravity (COG), diplomatic, informational, military, economic (DIME), homeland security (HLS), homeland defense (HLD)

**3.24 Explore and frame challenges associated with detection and defense against an unconventional attack on North America by low-altitude, low-speed, low-observable air threats.**

- Explore and document current defense capabilities against low-altitude, low-speed, low-observable air threats.
- Propose capabilities required for NORAD/NORTHCOM to achieve detection, interception and destruction of low altitude air threats to the North America.
- Define radar system specificity for surveillance systems to detect and share information with defensive forces.
- Suggest approaches to improve data transfer (voice, target info) from Air Battle Managers (ABMs) to defensive forces.

Priority: 1

Key Terms: unconventional attack, low altitude air threat, cruise missiles, low-altitude, low-observable air threats; small aircraft threat; general aviation, visual flight rules (VFR); low, slow air threats

**3.25 What are the threats and challenges associated with currently untracked air threats (general visual flight rules (VFR) aviation, low-altitude, low-observable vehicles), and what can NORAD (in conjunction with Federal partner agencies) do to address these threats and challenges?**

- What is the extent of the detection/tracking problem?
- What threat payloads/strategies are of concern from these vehicles?
- What are the required NORAD capabilities to address the challenges?
- How can NORAD capitalize on work done by other Federal agencies in detection/tracking?
- What avenues of cooperation and synergies are available through inter-agency cooperation?

Priority: 1

Key Terms: Low-altitude, low-observable air threats; small aircraft threat; general aviation, visual flight rules (VFR); low, slow air threats

**3.26 Demonstrations of military force have a proven utility. What might be the utility of demonstrations of cyber force as a crisis management tool?**

- Should decision makers regard information operations as comprising an analogous capability as conventional or strategic military forces as tools for managing crises?
- What would distinguish displays, demonstrations, and uses of cyber force in actual practice?
- Is the distinction between offensive and defensive uses of force useful in this context?
- What considerations should decision makers bear in mind when considering displays, demonstrations, or uses of cyber force in the context of a crisis?
- What legal and ethical issues does this raise?

Priority: 1

Key Terms: cyber force, demonstration of force, information operations, crisis management, offense, defense, legal, ethical

**3.27 What non-lethal weapons (NLW) capabilities does DOD require to successfully conduct assigned homeland defense (HLD) and civil support (CS) missions?**

- What are the policy/legal implications of using NLW in the CONUS?
- What are the desired effects for employment of NLW at the strategic, operational and tactical levels?
- Rationale for using NLW.

Priority: 1

Key Terms: Non-lethal weapons (NLW)

**3.28 How does bounded rationality contribute to failures of judgment during complex crises?**

- How are limits on human judgment and cognitive ability manifested under stress?
- Is it possible to categorize failures in human judgment?
- What environmental variables influence decision making under stress?
- Do these variables change across different categories of failures in judgment?
- This research topic lends itself to a survey of the literature and/or case studies.

Priority: 1

Key Terms: crisis management, decision making, human judgment, bounded rationality

**3.29 Can international crisis management and domestic incident management be integrated?**

- Characterize international crisis and domestic incident management.
- Are these crises and incidents different in terms of objectives, outcomes, processes, and requirements?
- If so, can these objectives, outcomes, processes, and requirements be synthesized?



- What features might characterize a synthesized system for managing both international security crises and domestic incidents?

Priority: 1

Key Terms: crisis management, incident management, domestic, international

### **3.30 Integrating US CT strategy with US National Security Strategy (Also see topic 3.1)**

- How can the elements of the US CT strategy be integrated with programs to address failed and failing states, reconstruction and stabilization, and development.
- How could these programs be better funded and managed?
- Do they have common objectives that would lend themselves to integration?
- Assess US interagency positions on an integrated approach.

Priority: 2

Key Terms: strategy, combating terrorism, interagency, development, failed states, reconstruction, stabilization

### **3.31 Develop a long-term DoD vision statement for HD/HS.**

- What are the key challenges ahead, with DoD both in its lead role for HD and a supporting role for HS?
- What are the long-term objectives for HD and HS?
- Can we develop a transformational roadmap to meet these objectives?
- What should the end state look like?

Priority: 2

Key Terms: vision statement, challenges, roadmap, transformation

### **3.32 How can we improve the interconnectivity of United States and international efforts to reduce the WMD/E threat?**

- What are the Federal and international programs intended to address this threat?
- What are the relative strengths of these programs?
- Where do these programs still leave the US most vulnerable (program weaknesses/gaps)?
- What steps can be taken to improve the coordination and synergies between these programs?
- What new programs/approaches will best plug the existing gaps?

Priority: 2

Key Terms: WMD/E defense, interagency coordination, international cooperation

**3.33 What are the Maritime Security Policy Issues for NORAD/USNORTHCOM? (Also see topics 3.7, 3.8)**

- How can a situation awareness capability similar to our current air picture be created?
- How can our sea lanes be secured?
- Is requiring a sea “flight plan” a suitable solution?
- What are the implications of this approach and what are better alternatives?
- How can information-sharing be promoted in the maritime realm?

Priority: 2

Key Terms: maritime security, NORAD, NORTHCOM, sea lanes, air picture, situation awareness

**3.34 How can we best encourage federal, state and local governments to participate more fully in appropriate exercises? (See topic 2.24)**

- Identify the exercises being conducted.
- Who are the key players and at what capacity/frequency can they be expected to participate?
- What state and local players should be engaged most frequently and what is the priority by state?
- What funding is available and how can it be ‘fenced’ for state (all levels) participation in a national exercise program?
- What is required for USNORTHCOM implementation (i.e. budget, scheduling, policy, training, non-DOD coordination, etc.)?
- Assist state and local governments in deconflicting multiple exercises.
- What is the most effective means for collecting and incorporating non-DoD input for exercise MSELs?

Priority: 2

Key Terms: exercises, interagency, coordination, participation, state government, local government, NORTHCOM, MSELs

**3.35 What is the appropriate NORTHCOM involvement in federal, state, tribal, and local government exercises?**

- Identify the exercises being conducted.
- Who are the key players and at what capacity/frequency can they be expected to participate?
- What state and local players should be engaged most frequently and what is the priority by state?
- What funding is available and how can it be 'fenced' for state (all levels) participation in a national exercise program?
- What is required for USNORTHCOM implementation (i.e. budget, scheduling, policy, training, non-DOD coordination etc.)?
- Assist state and local governments in de-conflicting multiples exercises.

- What is the most effective means for collecting and incorporating non-DOD input for exercise Master Scenario Event Lists (MSELs)?
- How can we best disseminate results of exercises (lessons learned, classification)?

Priority: 2

Key Terms: Exercises, interagency, coordination, participation

### **3.36 What are the optimum education and training curriculum and courses for HLD and Defense Support to Civil Authorities (DSCA)?**

- Survey and compare and Homeland Defense/Homeland Security curricula
- What are the competencies and best practices for HLD/HLS?
- What are the standards for curriculum content for the discipline of HLD and DSCA?
- How can HLD and DSCA curriculum content best be identified?
- What research methodologies and approaches can be used to refine HLD and DSCA curriculum content?
- How should HLD and DSCA courses be structured?
- What is the appropriate balance of HLD and DSCA courses?
- How are the curriculum, instruction and assessment aspects of HLD and DSCA course best served?

Priority: 2

Key Terms: Education and training, curriculum, instruction, HLD and Military Assistance to Civil Authorities (MACA) subject matter content

### **3.37 What role should NORAD/NORTHCOM play in developing an integrated Federal, state, and local homeland security/homeland defense training infrastructure to support individual and collective training?**

- How can DOD's training transformation efforts be leveraged for support?
- How can DHS' HSPD-8 implementation efforts be leveraged for support?
- How should NORAD/NORTHCOMs Homeland Security/Homeland Defense Education Consortium be integrated with DHS' National Domestic Preparedness Consortium?

Priority: 2

Key Terms: Individual education, collective training, training infrastructure

### **3.38 How can NORAD/NORTHCOM quantify the thresholds or trigger points where military support is required or necessary for civil support to local and state first responders?**

- At what level should these thresholds be established (local, city, state, region)?
- Each city, state, or region may be different in its ability to respond to varying types of emergencies, and thus may not need military support to the same degree as other

cities, states, or regions. As a result, should thresholds be established for each unique entity?

- What are the legal ramifications of establishing trigger points?
- Should these trigger points be established for information and coordination purposed only?

Priority: 2

Key Terms: Trigger points, quantitative thresholds, civil support

**3.39 How can USNORTHCOM effectively, efficiently, and legally develop and implement comprehensive collection of homeland defense and civil support threat information from relevant private and public sector sources consistent with US privacy law; and develop automated tools to improve data analysis and management, systematically track large amounts of data, and to detect, fuse, and analyze aberrant patterns of activity, consistent with US privacy protections?**

- What are relevant private sector sources? How can they be included in the development process?
- How would the legality of the collection effort be accomplished?
- What is the definition of "threat" information?
- What NORTHCOM policy can be developed to address the collection effort?

Priority: 2

Key Terms: NC collection, public/private partnerships, NBIS

**3.40 Examine the role of strategic communications in the war on terrorism. (Also see topic 3.62)**

- Assess strategic communications and public diplomacy efforts to date.
- Examine interagency roles and responsibilities in this area (STRATCOM, SOCOM, Department of State, etc.).
- What should be DoD's role in public diplomacy?
- How can the U.S. best engage and win the war of ideas? How can the United States engage the Al Qaeda narrative, and how can the U.S. apply the different instruments of national power not just to combat the narrative but to engage it in a way that discredits it, while bolstering the U.S. message?
- This topic may lend itself to case studies.
- Consider the Sep 04 DSB Report on Strategic Communication.

Priority: 2

Key Terms: strategic communications, public diplomacy, war on terrorism, case study, al Qaeda

### **3.41 Addressing the Underlying Conditions that Foster Terrorism**

- Chapter 12 of the 9/11 Report addressed the underlying conditions of terrorism, but a priority effort to deal with them has not been undertaken.
- Does the report present a comprehensive listing of underlying conditions?
- Do they vary by country/region? How?
- What should be the priorities for addressing these conditions?
- How should the interagency community coordinate US efforts to address the underlying conditions at the regional level?
- This research topic lends itself to a case-study approach.

Priority: 2

Key Terms: regional, underlying conditions, 9/11 Report, interagency

### **3.42 Examine homeland security/defense efforts to prevent and deal with non-catastrophic attacks.**

- What role should the military play?
- How should the U.S. prepare for a series of attacks that do not cause massive casualties? What are the implications for budgets and other resources should the U.S. need to repeatedly respond?

Priority: 2

Key Terms: WMD, terrorism, homeland security, homeland defense, NORTHCOM, MACA

### **3.43 Examine how recent terrorist attacks affected regional security cooperation.**

- How has the perceived need for greater protection against terrorism affected border controls and other aspects of national and regional security?
- How have differing perceptions of the threat from terrorism affected regional security cooperation?
- Explore the role of regional security organizations in fighting the war on terrorism.

Priority: 2

Key Terms: globalization, terrorism, nation building, multilateral organizations, failed states, regional stability, soft power

### **3.44 What key Theater Security Cooperation (TSC) initiatives are required to reduce vulnerabilities and enhance the overall HLD posture of the US?**

- Can the Global War on Terrorism (GWOT) be effectively prosecuted in all areas of the NC Area of Responsibility (AOR)? What shortfalls need to be overcome through TSC initiatives?
- What are the special challenges regarding Mexico that must be addressed through an interagency effort?

- What are the strategic issues associated with Canadian participation in regional defense?

Priority: 2

Key Terms: TSC, GWOT, Canada, Mexico

**3.45 Can an effective common definition of decontamination between military and civilian standards be established? (Also see topic 2.19)**

- What are the current definitions of decontamination between civilian and military policy for CBRNE events?
- What are the policy differences between local, state, and federal?
- Can best practices be identified between all organizations?
- What are the policy barriers towards creating common standards?
- What are the benefits or risks associated with creation of common standards?

Priority: 2

Key Terms: Decontamination, NFPA, DOD, DOE, OSHA

**3.46 What is the most effective method to rapidly integrate Federal Interagency Mortuary Affairs (MA) assets with local responder MA organizations? (Also see topics 3.17, 3.47)**

- How do we map comparative units/Individuals to effectively integrate military capabilities into federal and local units with MA missions?
- What is the best methodology and/or metrics to provide comparisons between military, federal and local MA capabilities (e.g. DOTLMP-F)? Provided comparisons for MA using this methodology.
- Does the current inability to accurately map capabilities result in inefficiencies with sourcing military support? If so, then to what extent? Are there recommendations for more efficient structures to enable better integration capabilities?
- Can the use of MA trained augmentees or modularized MA units provide more effective support?
- Is additional policy required to link NRP level MA guidance further with local and interagency efforts?

Priority: 2

Key Terms: Integration, capability mapping, DOTMLP-F, mortuary affairs, efficient employment

**3.47 What is the USNORTHCOM Combatant Commander's intent on the handling of deceased military members from an incident? (Also see topics 3.17, 3.46)**

- How will the different jurisdictional issues shape that intent?
- Who will be identified as military?

- If there is different treatment given to military deceased, what is the public perception and how does it affect public trust?
- If states release military remains the:
  - what special packaging is needed to get them to Dover Port Mortuary?
  - what is the logistics footprint to execute?
  - would we need the creation of special Armed Forces Medical Examiner site teams for all the bases with dead?
- If separate procedures for the military/civilians are conducted what is the impact on the ability of the military to the civil support mission?

Priority: 2

Key Terms: Mortuary affairs, public trust, civilian casualty procedures, military fatalities

### **3.48 Assess potential challenges for civil-military relations from DoD's growing involvement in HD and HS activities.**

- Does DoD's growing domestic role pose a potential threat to US civil liberties?
  - What problems could arise, for example, if USNORTHCOM is directed to take the lead at a time of national emergency?
- Are current constraints on DoD's role adequate to preserve the principle of civilian control of the military?
- What measures, if any, are needed to ensure that our freedoms are protected?

Priority: 2

Key Terms: civil-military relations, civil liberties, civilian control of military

### **3.49 Examine the strategic implications of human security issues.**

- Using a regional case study, examine the impact of human security issues (e.g., disease, poverty, individual rights) on regional stability.
- Does the military have a role in preventing or mitigating the effects of human security challenges?
- How do human security issues affect terrorist recruiting, sympathy for terrorist causes, and possible safe havens?

Priority: 2

Key Terms: human security, terrorism, human rights, safe havens, terrorist recruiting

### **3.50 How do social networks respond and adapt to complex, unanticipated events?**

- Is it possible to formulate a useful taxonomy of varieties of shocks to social networks?
- What models exist to understand the impact of these shocks on social networks?
- What characteristics of social networks permit or constrain systemic adaptation to shocks?
- By what means can these characteristics be manipulated in advance?

- What are the priorities for further research in this area?
- Consider the forthcoming literature from the Naval Postgraduate School.

Priority: 2

Key Terms: taxonomy, social networks, unanticipated events, social shock

**3.51 How does NORAD/NORTHCOM plan to ensure continuity of operations in the event of emergency, catastrophic failures, or loss of ability to operate from Building 2 or Cheyenne Mountain Air Force Station (CMAFS)? Not only the traditional NORAD missions, but missions related to HLD and Military Assistance to Civil Authorities (MACA) would be critical in an emergency (such as 9/11 or even severe weather), but the dual locations and dual-hatted nature of the staff could bring unique challenges.**

- What key mission must continue?
- What are the critical needs for communications, space, etc?
- What approaches have other combatant commands used to address this issue?
- What plans already exist?
- How can N/NC provide HLD and MACA support when they are themselves displaced?

Priority: 2

Key Terms: Continuity of operations (COOP)

**3.52 Can a common standard be achieved between military and civilian personal protective equipment?**

- What are the differences between civilian/OSHA and military MOPP equipment?
- What are the statutory or policy differences between OSHA and DOD?
- Are there valid cases for differing requirements other than superficial (e.g. camouflage colors for military use, etc)?
- Is the military working with civilian agencies to "type test" their equipment for certification to provide comparative levels of protection (MOPP IV vs. OSHA level C)?

Priority: 2

Key Terms: Personal protection equipment, OSHA, DOD, NFPA

**3.53 What are the most effective tactics, techniques, and procedures (TTPs) to assure that first responders are not entering a CBRN contaminated area unprotected?**

- What levels of training are currently given to first responders at local, county, state and federal levels?
- Are there areas for further improvement and standardization of this training (development of best practices)?



- What is the commonly recognized best case CBRN detection equipment set for first responders?
- What are the potential advanced CBRN detective technologies that can be employed by first responders?
- What are the legal ramifications for these policies?

Priority: 2

Key Terms: Advanced CBRN detection technologies, first responders, contaminated areas

**3.54 How can NORAD decouple its classic mission set from the asymmetric threat in order to react in a more flexible manner to asymmetric threats?**

- What needs to be changed to react to a new-age threat without having to change DEFCON to acquire assets and respond?

Priority: 3

Key Terms: Asymmetric threats, DEFCON, NORAD

**3.55 What are DOD's and NORTHCOM's roles in critical infrastructure protection (CIP) and protecting the defense industrial base (DIB)?**

- How does DOD plan for CIP when the potential target set is huge?
- How should the DIB be defined? How is/should the CIP be prioritized?
- What are/should be NORTHCOM's role in protecting the DIB? CIP?
- What capabilities/force packages are required for protecting and defending CIP and DIB?

Priority: 3

Key Terms: Critical infrastructure, CIP, defense industrial base, DIB

**3.56 How can NORAD/NORTHCOM effectively communicate with the various lead Federal agencies acting under the National Response Plan or in the event of a national disaster?**

- What methods of communication are used by Federal agencies and how interoperable are they?
- How can dissimilar communication systems be integrated for effective HLD/HLS communications?
- What should be the primary uses of wireless communications for emergency responders?
- How can NORAD/USNORTHCOM effectively utilize non-government amateur communication systems to support national communications in the event of a national disaster?
- What approaches have other homeland security entities used to resolve the integration of interagency communications?

- How can NORAD/USNORTHCOM ensure that it utilizes the SIPRNET only when appropriate?
  - What are the implications of over classification?
  - Does the extent of over classification that does occur damage the efforts of the interagency? Coalition cooperation?
  - By what means might over classification of material be reduced?
- What are the current legal and policy barriers to information sharing?

Priority: 3

Key Terms: Communications, homeland security, national disaster, wireless, communications integration, Federal government interagency cooperation, NORAD/USNORTHCOM

**3.57 Due to the interconnectedness of our economies, should Canada and the United States pursue a bi-national treaty or agreement for civil support? (Also see topic 3.5)**

- Public Safety and Emergency Preparedness Canada (PSEPC) and the Department of Homeland Security (DHS) are responsible for civil support in Canada and the United States respectively; should they create a common Canada/United States (CANUS) response plan rather than two separate plans with dissimilar technology?
- Assess PSEPC and DHS ability to do their missions for an event on the CANUS border.
- Determine whether the Canadian Forces and US military should be fully interoperable for civil support missions in support of PSEPC and DHS.
- Ascertain the Canadian public reaction to a closer military cooperation between PSEPC, DHS, Canadian Forces and the US military.

Priority: 3

Key Terms: Canada, United States, civil support

**3.58 How can NORAD improve its interagency coordination with the FAA and DHS with regard to identifying and cataloging Tracks of Interest and Temporary Flight Restriction (TFR) violators?**

- What systems can be used to enhance identification and improve information flow across agencies?
- To what extent can this information be shared with outside agencies?
- To what extent can this information be shared with the Canadian Government or Canadian counterparts?
- Can wide-area distributed and controlled-access data bases be applied to this problem?

Priority: 3

Key Terms: Unclassified COP, ADNET, GCCS, AMOC, multi-domain

**3.59 What factors need to be considered to determine the best mix of Active Component, National Guard (NG) and Reserve capabilities to accomplish HLD and CS missions within the USNORTHCOM AOR? (Also see topic 3.12)**

- What are the current NC force requirements/timing and identified shortfalls that might require use of NG and Reserve capabilities?
- Could NG and/or Reserve forces effectively supplement current Active Component forces to fulfill identified shortfalls? What are the cost/benefit implications?
- What are the legal or implications (e.g. mobilization) and changes required to effectively integrate NG and Reserve forces?

Priority: 3 (most appropriate for PME institutions)

Key Terms: National Guard, Reserve Forces, HLD, civil support

**3.60 How can NORTHCOM leverage the unique status of the National Guard (NG) to improve NORTHCOM's readiness and response for the homeland defense mission? (Also see topic 3.12)**

- Does the NATO military arrangement (coalition warfare) offer organizational opportunities for consideration to apply to the relationship of NORTHCOM and NG?
- Should NORTHCOM focus more on a unity of leadership of the homeland defense effort as opposed to a unity of command?
- How can NORTHCOM further exploit and build on the dual-hatting arrangement provided under the recent change to Title 32, Section 325 to improve on its readiness and response?
- What legislative changes are required to strengthen the role of the NG when under the command and control of the governor by in support of NORTHCOM?
- Should the purpose for the NG bureau "channel of communications between the Departments of the Army and Air Force" be expanded to include NORTHCOM and others? Is a change in law required or desired?
- How can NG Counter Drug assets be leveraged to best support the homeland defense mission?

Priority: 3 (most appropriate for PME institutions)

Key Terms: National Guard, homeland defense, Title 32

**3.61 How does the US Government convey a coordinated message to inform the public to deal with HLS/HLD situations?**

- How do we best integrate public diplomacy, public affairs, and the media?
- How does the DOD synchronize with DHS and other agencies?
- How should DOD train and educate its personnel to accomplish synchronization?

Priority: 3

Key Terms: Strategic communications, diplomacy, public affairs, information operations (IO)

**3.62 How can NORAD/USNORTHCOM ensure networks are protected against malicious code, and vulnerabilities resulting from software design flaws and improper implementation? (Also see topic 3.40)**

- How can vulnerabilities be identified, and their effects analyzed in a timely and realistic way?
- How can dissemination, receipt, acknowledgement and processing of vulnerability alerts and bulletins be performed in a timely and risk-appropriate way?
- How can instances of these vulnerabilities be discovered in systems and network devices?
- How can the operational impacts of vulnerability remediation be determined, and if those impacts are unacceptable, how can risk assessment and mitigation be performed in a timely and effective way?
- How can remediation of vulnerabilities through the application of corrective measures be performed effectively and in a timely way?
- How can successful remediation be verified, and how can compliance status with respect to alerts and bulletins be assessed and reported?
- What approaches have other combatant commands used to solve this issue?

Priority: 3

Key Terms: Vulnerability management, patch management, J6

**3.63 How can NORAD/USNORTHCOM automatically access and/or transfer data between two or more differing security domains and ensure security (and prevent spillage)? (Also see topic 3.13)**

- How can the DOD more effectively use existing and emerging cross domain solutions? How can solutions be better integrated with such IA and CND capabilities as vulnerability management, situational awareness, and accountability services (including I&A and non-repudiation)?
- How can cross domain solutions keep pace with the development of other information technologies key to net-centric operations? What capabilities should cross domain solutions provide to support the evolving GIG?
- How can cross domain solutions more effectively support agile operations? What capabilities should cross domain solutions provide that enable dynamic policy definition, policy enforcement, and connectivity?
- How can security spills be detected and contained? What tools can be implemented to prevent spillage?
- How can the extent of a spill be determined? How can devices on which unauthorized information is stored be identified, and how can unauthorized users be identified?
- How can affected devices and storage media be sanitized with minimum operational impact?

Priority: 3

Key Terms: Cross domain solutions, data transfer, security domains, J1

#### **4. REGIONAL AND EMERGING NATIONAL SECURITY ISSUES**

*(Also see topics 1.3, 1.10, 1.14, 1.15, 1.17, 1.19, 1.20, 1.22, 1.28, 1.29, 1.31, 1.32, 2.12, 2.20, 3.33, 3.34, and 5.49)*

##### ***Transregional Security Issues***

#### **4.1 Evaluate the Defense Department's goal of increasing language proficiency and cultural awareness, and propose alternatives.**

- Explore alternatives to language training for incoming personnel, such as recruiting people who are already bi-lingual and/or consider immersion programs.
- Consider cultural aspects; language is a means to understand a culture but not the only means, listening and reading skills are key (e.g., soon Chinese will be the most prevalent language on the internet).
- How do you prioritize it in relation to time away from operational proficiency/skills? What are the incentive structures to encourage learning difficult, but critical, languages such as Arabic, Chinese, etc.? How not to turn it into a “checkbox” structure.
- How do you develop a military language and cultural infrastructure flexible enough to adapt to conflict anywhere on the globe?
- How do you develop a system to bring first generation Americans from other cultures into the military/DOD?
- How is language capability currently assessed and prioritized?
- What is the status of regional studies in academia and what contribution can it make to language proficiency and cultural awareness?
- What languages and cultures should we concentrate on? [I'm not sure where this came from, and it's quite obtuse—the point is that we could find ourselves operating out of ANY nation, so I recommended the above edit.] Are some more critical than others? How should DoD prioritize and incentivize the study of foreign languages and cultures?

Priority: 1

Key Terms: language proficiency, cultural awareness, regional studies, IAS

#### **4.2 Examine the foundations and endurance of US military predominance.**

- Identify the political, economic, technological, social, and operational foundations of contemporary US military power.
- What role does US military predominance play in contributing to or detracting from international stability?
- How do other countries view US military predominance?
- Identify and analyze potential threats (internal/external) to US military power.
- What impact would the loss of US military predominance have on the US world role?
- What strategies could the US pursue to extend US military dominance?

Priority: 1

Key Terms: military power, military capability, threat environment, US role in the world

#### **4.3 Evaluate the role of radical Islam in the Middle East, South Asia, and Southeast Asia.**

- Assess the socioeconomic, religious, and demographic factors that contribute to the development of radical Islam.
- Assess the compatibility of radical Islam and democracy in the region.
- Explore the impact of radical Islam on stability in the identified regions.
- Examine the implications of radical Islam for US military presence and force protection in the region.
- Evaluate the effect of US operations in Iraq on the development of radical Islam.

Priority: 1

Key Terms: radical Islam, force protection, religion, democracy

#### **4.4 Evaluate the ability of the United States to effectively integrate national security policy and strategy across the necessary range of agencies.**

- Is there an increasing requirement for interagency integration? Why?
- Analyze how the US national security structure integrates global strategy and policy with key nations.
  - Contrast how the US integrates strategy and policy with long-time allies like Great Britain, with how it does so for “coalitions of the willing.”
  - Formulate a framework for understanding the future dynamics of national policy integration and apply that framework to formulate US international integration policy.
- Analyze how US national security agencies integrate global strategy and policy with one another.
  - Is a new PDD-56 needed? Was PDD-56 successful?
  - Can interagency integration policy transcend administrations or must it always be contingent?
  - What models can be applied to understand and improve interagency integration?
  - Should there be one regional division standard (e.g., Unified Command Plan) for the US government? If so, which current model provides the best universal regional standard, and if not, what strengths derive from multiple agency standards?
- Analyze how key DoD agencies integrate strategy and policy with one another.
  - Consider issues such as jointness, relations between COCOMs, relations between JFCOM and the services and other combatant commanders, integration of efforts in the GWOT.

Priority: 1

Key Terms: integration, strategy, policy, interagency, PDD-56, multinational, joint

#### **4.5 Examine preemptive/preventive war as a declaratory strategy.**

- Describe the role of preemptive/preventive war in US strategic documents (e.g., National Security Strategy, National Strategy to Combat Weapons of Mass

Destruction, National Strategy for Combating Terrorism, National Defense Strategy, and National Military Strategy).

- Analyze historical precedents.
- Assess congressional, domestic, and foreign reactions.
- Examine the impact of US policy on the WMD programs of key actors.
- Recommend changes to the policy and strategy.

Priority: 2

Key Terms: strategy, preemption, preventive war, strategic communication

**4.6 The United States has had a close security relationships with a number of Islamic countries, but events since the 11 September 2001 terrorist attack have substantially changed US standing in the Islamic world.**

- How have relations changed with Turkey, Saudi Arabia, and Pakistan since the beginning of the global war on terror in late 2001?
- Assess the possible military ramifications of the changing US relationship with these countries.
- Evaluate the long-term impact of events such as Turkey's failure to approve the US request for passage of US ground combat forces to Northern Iraq at the beginning of Operation Iraqi Freedom on future US passage, overflight, and basing requests and decisions.
- Evaluate the long-term impact of expanded basing in the Islamic world on the future of US basing and overflight rights.

Priority: 2

Key Terms: Iraq, Turkey, Saudi Arabia, Pakistan, US basing

**4.7 How can the DoD enhance the process of building security relationships with other countries? (Also see topics 3.33, 3.34)**

- How does the US assure allies and friends of its commitment to their security?
- How does US dissuade future military competition? What are some meaningful historical analogies of dissuasion?
- How can the effectiveness of various security assistance tools such as IMET, Subject Matter Expert Exchange, FMS, multilateral exercises, counterpart visits, etc., be measured?
- Should military recruitment deliberately target first generation foreigners for regional experience/expertise?
- How does DoD ensure US forces with peacetime and contingency access and enroute infrastructure?

Priority: 2

Key Terms: security relationships, IMET, Subject Matter Expert Exchange, FMS, multilateral

#### **4.8 Evaluate and examine the impact of the DOD force transformation strategy and policy.**

- Assess the analytic foundations for DOD's force transformation vision.
- Assess DOD's transformation objectives, imperatives, resources and constraints.
- Examine the relative role of the services in force transformation.
- Assess congressional and allied reactions to DOD's transformation vision.
- Assess alternative approaches, their analytic foundations, and their objectives.
- Recommend adjustments in vision, strategy and policy.

Priority: 3

Key Terms: transformation, strategy, change management

#### **4.9 The UN security role**

- Analyze the evolving role of the UN Security Council
- Could regional security arrangements supplement or replace the UN collective security system? Could other arrangements?
- Is the relative importance of bilateral and multilateral relations changing, and if so, what are the security ramifications for the United States?

Priority: 3

Key Terms: UN, UN Security Council, bilateral, multilateral

### ***Middle East***

#### **4.10 Assess the impact of Operation Iraqi Freedom on future US military operations.**

- OIF illuminated seams in planning between CENTCOM and EUCOM. Examine ways to minimize operational differences in cases where conflicts affect multiple AORs.
- How did the role of the Joint Staff in operational planning change from the 1990s to OIF?
- What can be done to avoid the large scale insurgency problem experienced after the completion of major combat operations in Operation Iraqi Freedom?
- Assess post-conflict (Phase IV) planning/interagency cooperation. How responsive was CENTCOM to outside (e.g., State Department, OSD) influence?
- Evaluate the military problems of Iraqi occupation, including issues such as proper equipment, training, and disposition of US forces.
- What long-term professional education programs and oversight processes should be put in place to assist the new Iraqi armed forces in developing civil-military relations to promote democratic governance?
- How can other regional actors help stabilize Iraq?
- Assess possible roles for the United Nations and other international organizations in stabilization operations in Iraq; what can be done to make such a transition more likely?



Priority: 1

Key Terms: OIF, CENTCOM, EUCOM, military intervention, civil-military relations, Phase IV operations

**4.11 Assess US policy toward Iran including goals, strategy, and the way ahead.**

- How might the United States engage Iran, diplomatically, culturally, and economically?
- How can military strategy and public diplomacy interact to affect US relations with Iran?
- How threatening are Iran's WMD development and terrorism sponsorship, and what actions should the United States and international community take to deter, prevent, or preempt the development and possible use of WMD?
- What circumstances might result in US military involvement in Iran; what would be the second and third order effects of US military action?

Priority: 1

Key Terms: Iran, WMD, terrorism, public diplomacy

**4.12 Assess the changing dynamics of Gulf security.**

- How would relations between the Gulf States and Iran change should Iran develop nuclear weapons?
- Assess the potential role of the Gulf Cooperation Council (GCC) as a regional security institution.
- Should US forces have permanent bases in the Gulf region, or should they return to the over-the-horizon basing policy of the pre-1991 Gulf War environment?
- Define the regional implications of the Israeli-Palestinian conflict and assess the capacity of the United States to exercise leverage in the Israeli-Palestinian conflict.

Priority: 2

Key Terms: Persian Gulf, Middle East, Gulf Cooperation Council (GCC), US basing, Israeli-Palestinian conflict

***Europe and Eurasia***

**4.13 Assess the implications of the Ukrainian “Orange Revolution” on Eastern European security.**

- Examine domestic implications of the Orange Revolution for Ukraine's orientation and stability.
- Assess the prospect for NATO-Ukraine relations in wake of Orange Revolution.

- Assess Russian response to Ukraine's Orange Revolution and the implications for US-RF and NATO-RF relations.

Priority: 1

Key Terms: Orange Revolution, Eastern Europe, Ukraine, Russia

#### **4.14 What are the impacts of the recent political “revolutions” in Georgia, Ukraine, and Kyrgyzstan?**

- Are these “revolutions” likely to sink? durable democratic roots?
- To what extent did US influence play a role in these developments? EU influence? What lessons do they hold for future US engagement in former Soviet space?
- Which additional countries in the former Soviet space – if any – are likely to undergo a similar political upheaval?
- What are the security implications of these changes for the United States?
- How is Russia responding to these developments?

Priority: 1

Key Terms: Georgia, Ukraine, Kyrgyzstan, Russia

#### **4.15 What is Russia's role in the emerging Eurasian security environment?**

- How has Russia reacted to NATO enlargement and to the deployment of NATO forces to new members in Central and Eastern Europe?
- Evaluate Russia's relationship to the European Union.
- Evaluate Russia's relationship to China.
- Analyze Russia's participation in the US-led global war on terrorism
  - Assess the Russian national security concept in light of the war on terrorism.
  - Is Russia committed to cooperation with the US in the war on terrorism?
  - How has the war in Chechnya influenced Russian-American efforts in the war on terrorism?
- How do Russian domestic politics affect its national security policy?

Priority: 1

Key Terms: Russia, NATO, EU, NATO enlargement, US security interests, terrorism, Chechnya

#### **4.16 Analyze EU efforts to develop an autonomous defense capability and its long-term effects on NATO and US engagement in Europe.**

- Assess the likely roles and importance of the EU security and defense policy (ESDP).
- Identify and evaluate the command and control structure established for EU military operations. To what extent is it compatible with US and NATO structures?
- Discuss European military capabilities (e.g., inter-theater airlift) and the effect of EU defense efforts on US/Europe military interoperability.

Priority: 2

Key Terms: ESDP, NATO, European Union, interoperability, command and control

**4.17 What is the developing security situation in Southeast Europe?**

- Evaluate probable end states for Kosovo and identify possible policies and action that could be taken by the United States, its allies, and the greater international community to prevent a reoccurrence of large-scale violence.
- Provide an update on state-building efforts in Macedonia and Bosnia, to include an assessment of the effectiveness of EU peacekeeping in Bosnia.
- What are the prospects and implications of Croatia joining the European Union?
- Identify the progress made towards integrating Serbia-Montenegro into European regional organizations.

Priority: 2

Key Terms: Balkans, border issues, Croatia, Kosovo, Macedonia, Serbia

**4.18 With 10 countries from Central and Eastern Europe now members of NATO and most also members of the European Union, what security challenges remain in the region?**

- Analyze domestic political instability in the region and its possible effect on regional security.
- What disputes exist among Central and Eastern European countries and their neighbors, such as territorial claims by private individuals on lands lost after World War II.
- How has the domestic and interstate rhetoric and concerns about minorities in Central and Eastern Europe changed since EU enlargement in 2004?

Priority: 2

Key Terms: Central and Eastern Europe, political instability, democratization, democratic consolidation, minority concerns

**4.19 What will NATO's role be in future US security strategy?**

- Consider the impact of NATO's 2004 round of enlargement on the alliance's political and military relevance.
- Evaluate the likelihood of a more robust NATO global role following NATO's stabilization force in Afghanistan.
- Assess NATO's effectiveness in fostering defense reform and military capabilities improvement in its new and aspiring members and Partnership for Peace partners.

- How have transatlantic relations changed as a result of disputes among NATO allies over US-led operation in Iraq? Has the war in Iraq strengthened European interest in developing its own defense capability and downgrading commitments to NATO?

Priority: 2

Key Terms: NATO, ESDP, NATO enlargement, security and defense activity, US security interests, European political trends, Partnership for Peace, PfP

## *Asia*

### **4.20 Assess the global implications of China's national security strategy.**

- Assess domestic sources of China's national security strategy.
- Evaluate China's security priorities by region, level of commitment and impact upon US security interests.
- Examine China's approach to the revolution in military affairs and assess China's defense priorities in key areas associated with systems warfare – precision strike, aero-space warfare, information warfare, C4ISR, special forces, and sea control and sea denial.
- To what degree can US security policy shape China's in a positive manner?
- Does the Taiwan issue go beyond reunification to affect China's global power position?
- How does China's rise affect US relations with Japan? Korea? Australia? India?

Priority: 1

Key Terms: China, revolution in military affairs

### **4.21 Evaluate the role of radical Islam in South Asia, particularly Pakistan. Explore the impact of radical Islam on democracy and stability in the region.**

- Assess the socioeconomic sources of radical Islam in the region.
- Determine the role of madrassas in shaping political Islam in Pakistan. What must be done to reform the madrassas and does Pakistan have the state capacity to complete the task?
- To what extent is Pakistan moving toward better relations with India by revising and softening the depiction of India in its education system?

Priority: 1

Key Terms: Islam, South Asia, Pakistan, India

**4.22 Assess the changing security dynamics of Central Asia.**

- What are the areas of potential conflict and cooperation between Russia, China, Iran and the United States in Central Asia?
- What are the potential security implications resulting from weak states in this region and how will these developments affect US national security?
- How great is the terrorist threat and its potential to incite regional instability?
- Discuss trends in the distribution of regional power among the United States, China, Russia, and Iran. Which country enjoys the strongest influence over the individual governments in the region? What factors account for this influence? How is this influence likely to change over the next 5 to 10 years?

Priority: 1

Key Terms: Central Asia, Afghanistan, Uzbekistan, Tajikistan, Turkmenistan, Kazakhstan, Kyrgyzstan, Russia, terrorism, China, US basing

**4.23 Discuss the impact of historical and cultural strains in Sino-Japanese relations on the future security environment.**

- How important are historical and cultural issues to preventing closer relations between Japan and China?
- What movement, if any, has been made on either side to move toward reconciliation through a revision of historical narratives?
- What are the demographic elements of this issue?
- What is the role of Chinese economic power and nationalism in Sino-Japanese relations?

Priority: 1

Key Terms: China, Japan

**4.24 Assess the impact of Operation Enduring Freedom on the future security environment**

- US military operations clearly were designed to maximize indigenous political legitimacy—is this a model that should inform future conflicts?
- Compare the post-conflict elections in Afghanistan and Iraq and analyze the military's role in those elections.
- What is the enduring effect on Central Asia of OEF?
- What can we learn about the evolving dynamics of base access from our experience in Central Asia as a result of OEF?
- What long-term professional education programs and oversight processes should be put in place to assist the new Afghani armed forces in developing civil-military relations to promote democratic governance?

Priority: 1

Key Terms: OEF, Afghanistan, Iraq, Central Asia

## *Western Hemisphere*

### **4.25 Assess security challenges in the region and how they can be addressed by constructive security cooperation; comment on the role that existing (and future) unified command structures, the Organization of American States (OAS) and other regional organizations can play in addressing regional security challenges.**

- How can the United States best encourage security cooperation among OAS member states? How do NORTHCOM and SOUTHCOM adequately address these security challenges?
- How should US regional strategy address Mexico's security concerns on its southern border with Central America? What role, if any, does NORTHCOM-Mexican military cooperation have in addressing homeland defense and homeland security issues? Consider a broad definition of security encompassing drug trafficking, human trafficking, armed gangs, insurgency, weapons proliferation, in addition to traditional security concerns.

Priority: 2

Key Terms: OAS, NORTHCOM, SOUTHCOM, Central America, Mexico

### **4.26 Foreign perceptions of the United States.**

- Do foreign perceptions impact US national security, and if so, how?
- Does an opinion-shaping strategy require region or nation-specific modifications?
- Develop a military component for a strategy countering resentment of the United States.
- Assess the US military's influence on foreign perceptions of America.
- What should the military's role be in perception management?

Priority: 2

Key Terms: foreign perception of America, perception management, public diplomacy

## *Africa*

### **4.27 Assess the changing security dynamics in Africa.**

- What are the implications for energy sources in West Africa, both for regional stability and US interests?
- What role can the African Union and other regional organizations play in African security and development initiatives?
- How can the US shape efforts in and around the Horn of Africa to assist in the war on terrorism?
- Are sub-regional organizations, such as ECOWAS, a more useful vehicle for addressing African security issues?
- How can environmental security issues, such as disaster response, be used to promote military support to civil authority and legitimacy in high terrorist threat areas?

Priority: 2

Key Terms: African Union, energy, oil, West Africa, Horn of Africa, ECOWAS, terrorism, environmental security

### **4.28 Discuss the security implications of the HIV/AIDS epidemic in Africa.**

- Which states are most affected by the pandemic?
- What is the role of the United States and other international actors?
- How would it affect a US military intervention in the region?

Priority: 3

Key Terms: HIV, AIDS, Africa, pandemic

## ***Environment and Security Issues***

*Note: Many of the environmental, environmental health, and sustainability topics may be developed as case studies of specific nation states or geographic regions selected by the researcher. Policy gaps and potential solutions should be identified.*

### **4.29 Examine the relationship between water, regional conflict, and US national security interests.**

- What role does water quantity or quality have in promoting regional tensions or conflict?
- How can water resources be used to promote multilateral cooperation and/or regional confidence building measures (e.g., Israeli and Palestinian cooperation)?
- Coverage may be local, national or transnational water issues, as the researcher chooses.
- What existing or new early warning systems are required to better monitor water scarcity and related impacts, e.g., to food security?.

- What efforts are underway to better determine the true valuation of water as a critical resource?
- How may new local, national, and multi-lateral institutions be created or improved to improve sustainable water management ecosystems?
- How can the military better participate through existing or new organizational frameworks?
- The focus may be a past experience (lessons learned), a current issue, or a plausible scenario for a future situation.
- How might terrorists target water resources?
- Explore how this non-traditional threat is addressed in US national and military security documents and in recent studies by international organizations, e.g., UN.

Priority: 1

Key Terms: water rights, water availability, water quality, resource issues, water conflict, environmental security, sustainability, sustainable, human security, terrorism, environment

#### **4.30 What are the implications of demographic changes on US national security interests?**

- Examine cross-border population movement (e.g., legal immigration and uncontrolled population movement by region).
- Examine the relationship between demographic pressures and the ability of new democratic regimes to maintain their legitimacy.
- What are the demographic roots of terrorism?
- Assess the security implications of urbanization and population migration.
- Examine demographic changes in key powers and weak states and their effect on US national security.
- Characterize the relationship between disease pandemics and demographics.

Priority: 1

Key Terms: population movement, demographics, border issues, trafficking, migration, urbanization, disease, terrorism, pandemic, environment

#### **4.31 How do natural resource dependencies influence US national security interests?**

- Coverage will be focused as determined by the researcher based on the following broad list of topical issues and suggested research questions.
- Explore security implications of dependence on the open market for strategic or critical materials, e.g., China, India.
- Explore how nontraditional threats are addressed in key US security strategy documents.
- Examine regional dependencies, e.g., European Union and Russian energy relationships, or US-Venezuelan energy relationships.



- What military options are available and should be used to guarantee the supply of strategic resources (Sea Lines of Communication, protecting critical infrastructure, etc.)?
- Explore the relationships between resource dependencies and conflict.
- Develop case studies on natural resources as a strategic driver in regional conflicts.
- Analyze the case of any nation or group of nations, as one case, or a comparison of cases.
- Identify ways for Combatant Commanders to minimize resource conflicts in their AOR.
- How do natural resource issues promote terrorism and insurgencies?
- Examine the secondary effects of natural resource shortages, such as loss of legitimacy, economic instability, tensions with neighbors, impact on US national security interests
- Forecast plausible future environmentally based conflicts – state the evidence.
- Examine the role of the “new strategic minerals” to US national security.
- Examine alternate strategies to reduce US dependency on foreign oil and implications to the US military.

Priority: 1

Key Terms: water war, natural resources, strategic minerals, strategic materials, defense industrial base, regional stability, resource wars, environment, environmental security, water security, scarcity

#### **4.32 Examine the inter-relationship between a nation’s security and its long-term sustainability.**

- Examine the definition, usage, and relationship of the terms sustainability and security, e.g, can there be security without sustainability and vice-versa
- Examine the inter-relationship of the triple bottom line of sustainability: mission, environment, and community.
- How can a sustainability-based strategy improve and strengthen military capabilities?
- How can the military’s environmental footprint be reduced through more sustainable practices?
- How might current and future training, testing, and mission requirements be improved?
- How might impacts and total ownership cost (e.g., military systems, facilities and operations) be minimized?
- How might the well being of the military and civilian communities be enhanced?
- How might the principles of sustainability drive innovative technology to better anticipate future military needs?
- How can a sustainability ethic be better fostered within the military?

Priority: 1

Key Terms: sustainability, national security, triple bottom line [of sustainability], security, innovative technology, sustainable practices, environmental footprint, well being, sustainability ethic, environment

**4.33 What is the strategic impact of EU environmental regulatory frameworks on the future stationing of US forces in Europe?**

- Review existing and planned EU environmental (framework) regulations.
- Conduct comparative assessment of EU and US environmental law.
- How will developing EU defense competency affect US operations and training?
- How are European militaries responding to this potential issue?
- How will accession by South East European nations to the EU affect future US operations and training?
- Explore the associated legal framework and funding considerations associated with restationing.

Priority: 1

Key Terms: environmental law, environmental regulations, EU, European Union

**4.34 Examine the strategic implications to the US military of increasingly restrictive chemical production, importation, and usage within the European Union (EU).**

- Explore current and proposed legislation related to chemical restriction in the EU, e.g., REACH [Registration, Evaluation, and Authorization and Restrictions of Chemicals].
- How are major US chemical manufacturers and governmental agencies reacting to EU scrutiny of new chemical substances and persistent organic pollutants (POPs)?
- What is the potential impact on future military readiness, training, and operations?
- How will current and planned restrictions impact development and procurement of US weapon systems?
- How can the US military address related concerns, e.g., application of green chemistry and green procurement?
- What are the implications for future US and EU relations?

Priority: 1

Key Terms: chemicals, European Union, EU, regulated substances, REACH, persistent organic pollutants, POPs, green chemistry, green procurement, R&D, acquisition, weapons systems, environment

**4.35 Examine how critical regional environmental issues might be used to promote the Combatant Commander Theater Security Cooperation Programs (TSCP) (i.e., conflict prevention, multilateral cooperation, confidence building measures). (Also see topic 3.44)**

- Examine the role of environmental issues in eroding governmental legitimacy and promoting terrorism.

- Prepare an analysis (detailed case study) of one Combatant Commander's (COCOM's) or a comparison of COCOM's area of responsibility (AOR) that identifies:
  - US national security interests and objectives for the AOR
  - Relevant terms of TSCP that address issues
  - Concepts for using environmental security to support the TSCP
  - Regional examples of how environmental security has and can be used to promote access, interoperability, and influence communication, cooperation and stability
- Examine the availability and usage of related intelligence by COCOMs
- Include consideration of available resources, regional interagency programs, international programs and international organizations.

Priority: 1

Key Terms: theater security cooperation programs, TSCP, Confidence Building Measures, multinational cooperation, terrorism, environmental cooperation

#### **4.36 What are the environmental security issues that create the underlying conditions for terrorism?**

- Which of the underlying factors that foster terrorism are environmental in nature?
- How can the US security cooperation plans of the COCOMs be used to address these underlying conditions?
- How have regional militaries incorporated environmental sustainability into their combating terrorism programs?
- How can COCOMs use environmental security issues to help host nation militaries build their legitimacy and reduce potential terrorist sanctuaries?
- How do environmental factors contribute to failed and failing states?
- To what degree is environmental sustainability essential to reconstruction and stabilizations efforts, e.g., can you have successful reconstruction and stabilization without environmental sustainability?

Priority: 1

Key Terms: terrorism, environmental security, security cooperation, sustainability, failed and failing states

#### **4.37 Assess the environmental and health concerns associated with the military and/or terrorist use of nanotechnology.**

- Examine the potential consequences of nanotechnology product dispersal from military operations and accidents.
- How could terrorist organizations use nanotechnology to threaten the US?
- Forecast concerns that might arise, supported by science or supposition.
- What countries appear active in nanotechnology research, and which are unusually quiet about their research?
- What is the focus of other countries' research and what are the associated benefits to military application?

Priority: 1

Key Terms: nanotechnology, environmental health, dispersal, nanotechnology research, terrorism, environment

**4.38 How should Combatant Commanders environmental guidance to operational plans be designed to better promote theater readiness and warfighting objectives?**

- Evaluate and compare environmental guidance, e.g., Environmental Annex Ls, for large operations (Afghanistan, Iraq, Kosovo) for content, scope, and complexity.
- Compare and contrast Annex Ls from OPODs for large training deployments, combat operational deployments, and peacekeeping operations.
- Examine the relationship between Annex L and health and safety considerations discussed elsewhere in the OPOD and applicable annexes.
- Review subordinate command directives, FRAGOs, and OPODs (e.g., Service component), to ensure objectives of Annex L are executed.
- Examine the effectiveness of current intelligence systems to support Annex L.
- Assess need for DoD and Service environmental policy for contingency operations.
- Suggest changes to Joint Publication or other policy/guidance to improve outcomes, or justify why changes cannot be achieved or aren't needed.

Priority: 1

Key Terms: environmental guidance, environmental policy, Annex L, conflict, environment, OPOD, operational plans

**4.39 Examine the effectiveness of current intelligence systems to support force protection (e.g., human health and safety) and to limit environmental damage during military operations.**

- How have the combatant commands employed environmental and environmental health intelligence in recent operations?
- How effective has communication been in planning for contingency operations between the intelligence, engineering, medical, and legal communities?
- Is the current system for tasking the intelligence community to provide this environmental and environmental health information successful?
- How effective has the application of intelligence been in locating base camps and protecting deployed forces?
- What are major open US and foreign sources of environmental intelligence that are currently available for use by military communities, e.g., OSIS – Open Source Information System?
- What is the role of the US in making open source information more available to other allied nations?

Priority: 1

Key Terms: environmental intelligence, environmental health intelligence, open sources

**4.40 Assess the strategic implications of the Aarhus Convention (establishing rights for environmental information, public participation, and access to justice) for US readiness and training in Europe.**

- Examine the political and social elements that led to this convention.
- Review requirements under this convention and identify their implications for current and future US and European military operations.
- How can the US use the Aarhus convention to improve its relations with its EU allies?
- Compare requirements under Aarhus with current US requirements.
- Explore other emerging public participation requirements in other theaters.
- Provide policy recommendations.

Priority: 2

Key Terms: public involvement, public participation, access to environmental information, environmental justice, environmental decision making, Aarhus Convention

**4.41 What are the environmental factors in urban warfare?**

- How could the provision or denial of environmental resources be used to influence mission success?
- Assess provisions of fresh water, sanitation services, electrical power, shelter and transportation.
- Assess readiness of support services to locals and non-combatants.
- Explore how the environment might be used as a weapon and the resulting impacts, e.g., COCOM operational and campaign plans.
- Identify the information requirements to develop a picture of the operational environment.
- Use Balkans, Afghanistan, and Iraq for lessons learned.

Priority: 2

Key Terms: environmental security, ES, urban warfare, siege, expeditionary forces

**4.42 Examine the relationship between International Governmental Organizations (IGOs) and Non-Governmental Organizations (NGOs) and the US military in addressing environmental health aspects of complex contingency operations.**

- What is the stated role and mission of these organizations in CONOPs?
- What is the appropriate role of these institutions across the various phases of a CONOP, e.g., planning, deployment, execution of the operations, post-conflict and reconstruction, and redeployment?
- How effective have these institutions been in recent CONOPs?
- Explore the transition of responsibilities from the US military to IGOs and NGOs.
- How has the US military interacted with these organizations in the past?
- How might overall effectiveness and coordination between stakeholders be improved?

Priority: 2

Key Terms: international Governmental Organization, IGO, Non-Governmental Organization, NGO, contingency operation, CONOP, planning, deployment, redeployment, post-conflict and reconstruction, environment

**4.43 Identify the strategic implications of the environmental impact of military operations (e.g., depleted uranium and Arab and Balkan public perception of the US).**

- Examine the legal frameworks that might constrain US strategic options.
- What are the implications for the US reputation worldwide and its effectiveness in the war of ideas and belief systems?
- What are the constraints placed on the regional Combatant Commanders?
- What policies should be implemented to preserve US strategic options?
- To what degree do these environmental impacts limit the success of US strategic communications, e.g., information operations promoting democratic principles?

Priority: 2

Key Terms: information operations, environmental security, war of ideas, campaign planning, legal, legal framework

**4.44 Assess the role of emerging/resurgent diseases as a challenge to force protection efforts and as a generator of military operations.**

- Identify potential scenarios that threaten US forces at home and abroad.
- Should military forces carry out coalition or peacekeeping operations in high threat regions?
- Explore the relationship of encroachment to increased incidence of infectious disease.
- Examine the role and organization of the military and its relationship with other allied partners and international stakeholders in managing threats posed from diseases?
- Should military forces be involved in controlling and eliminating disease?

Priority: 2

Key Terms: disease, epidemic, AIDS, Africa, South Asia, SARS, encroachment, environmental health, force protection

## **5. AIR AND SPACE ISSUES AND PLANNING**

*(Also see topics 2.7, 2.8, 4.39, and 6.19)*

### **5.1. What is the role of contractors within the military? (Also see topic 2.8)**

- Where is the line between the two?
- Examine what military missions should be contracted out.
- What is the difference between contractors serving under battlefield and non-battlefield conditions?
- What should be the role of Guard and Reserve forces? What are some model criteria? Are there different models for different situations (e.g. crisis v. steady state)?
  - What about the idea of “sponsored Reserves” – reservists working in positions they can be called up to do as military personnel?
  - Examine the idea of contractors being called up and the difference in their pay as contractors and active duty personnel is paid by the contractor.
- Re-look at rules for transitions from active duty to contractor. What limitations are needed and which are onerous?
- What are the rules of engagement for civilian contractors?
- Who is a combatant, especially as contractors become more involved in combat-type activities?
- What are the UCMJ issues that arise?
- How is command authority handled?
- Examine issues of pay and insurance.
- What complications arise in separating the roles of contractors who are called up as part of the reserve component and may then work alongside other contractors?

Priority: 1

Key Terms: contractors, privatization, A-76, reserves, legal, ROEs

### **5.2. Which organization should be responsible for the planetary defense mission?**

- What would this mission entail?
- What capabilities would be required?

Priority: 1

Key Terms: Space Command, space operations, NASA

### **5.3. What are the factors when setting up an organization to handle post-conflict stability operations and reconstruction?**

- What is the best way to make this flexible and adaptable to the situation on the ground?
- What is the Air Force role in this?
- What is DOD’s role?
- What is the relationship between the State Department and DOD? Which has the lead?

- Review the latest directives and guidance on such operations and identify the requirements from them that DOD and the Air Force are expected to meet.
- What should be the role of AF reserve component forces in stability operations?
- Should there be a standing Joint Task Force with the State Department in Washington, DC for these operations?
- What is the US and DOD policy for dealing with “ungoverned spaces” around the world?

Priority: 1

Key Terms: OIF, OEF, MOOTW, SASO

**5.4. Examine the stresses of high OPSTEMPO on the Air Force reserve components.**

- What roles are they playing and what should they be playing?
- How does this vary by career field?
- What outside factors would influence this?

Priority: 1

Key Terms: tempo, retention, recruiting, Guard, Reserve

**5.5. Can integrating active and reserve component units improve operational efficiency?**

- What are optimal active component/reserve component ratios for integrated units (including fighter, bomber, strategic airlift, space operations)?
- What tasks are best suited for Guard and Reserve forces?

Priority: 1

Key Terms: tempo, organization, Guard, Reserve

**5.6. How can the Air Force best organize, train, and equip for UAVs, as well as control and operate them?**

- How was the idea of fighter squadrons devised and what lessons from that exist for organizing Air Force UAVs?
  - How can UAVs be organized into the Air Force? Are there better ways than squadrons, such as by task?
- Define what a UAV is. Should they be defined by range (strategic v. tactical), by payload, or some other way?
- What would a UAV look like that was built for long-range strike or persistent strike?
- How does the military control and deconflict this ever-growing number of aircraft?
- How does the military handle the bandwidth needed for aircraft control and sensor exploitation?
- What are the optimal capabilities that can be put into a UAV?
- What can a UAV do that a piloted aircraft cannot?



Priority: 1

Key Terms: UAV, C2, command and control, ISR, bandwidth, organization

**5.7. How can the US increase the number of aerospace engineering students, especially relative to other countries?**

- What infrastructure needs to be improved for US aerospace?
- How can the Air Force provide incentives?

Priority: 1

Key Terms: infrastructure, engineering, recruiting, research, development, R&D

**5.8. How can the Air Force logistically support the Army and Marine Corps distributed and re-supply operations?**

- What are the relative costs of the current hub-and-spoke logistics system vice a precision airdrop capability?

Priority: 1

Key Terms: logistics, joint operations, OIF, OEF, mobility, airlift

**5.9. How can the transition from basic science to engineering and fielded systems be speeded up?**

- How can technology demonstrations be operationalized?
- What should be the Air Force role in developing the next generation of fully re-usable launch vehicles?
- What about the next-generation SBIRS?
- How can DOD develop an acquisition system that will produce a product in four years or less?

Priority: 1

Key Terms: acquisitions, procurement, R&D, case studies, lessons learned, technology, transformation, space operations

**5.10. What does the European Galileo system mean for US warfighters?**

- Will there be interoperability issues as allies use Galileo and the United States uses GPS?
- Will the United States jam Galileo in a conflict to deny adversary access?

Priority: 1

Key Terms: R&D, case studies, lessons learned, technology, transformation, space operations, ESA, European Space Agency, EU, European Union

**5.11. What doctrine, equipment, organizational structures, and tactics, techniques, and procedures are needed to effectively support ground-based special operations forces across the wide range of contingency operations?**

- How might establishing a UAV squadron meet this need?
- What modifications are needed to AFDD 2-7 to reflect USSOCOM's role as a supported combatant command?
- What capabilities are needed to provide cover/protection to ground-based special operations forces inserted well behind "enemy lines"?
- What organizational changes are needed for the air operations center to act in support of SOF?
- Write unclassified case studies of recent campaigns.

Priority: 1

Key Terms: special operations forces, doctrine, contingency operations, joint operations, special ops, case studies, lessons learned, USSOCOM, AFSOC, SOF, CCT, PJ, AOC

**5.12. Examine the domestic use of military assets.**

- How will various military assets (ISR, C2, mobility) be used domestically in homeland defense and crisis management and what is NORTHCOM's role? How will these assets be tasked?
- What is the role of the Air National Guard in NORTHCOM homeland defense missions and how does it compare with their Title 32 responsibilities to their states?
- What role does NORTHCOM have in continuity of government and continuity of operations? What might the Air Force be asked to do?
- Are there service responsibilities that might fall under NORTHCOM's mission? (ex. UAVs, high-altitude airships, ISR)
- How can space assets be used to support NORTHCOM's domestic mission?
- How does the Coast Guard contribute to NORTHCOM's mission?
- How can DOD assist the Department of Homeland Security with border and transportation security, through the Border Patrol and Customs?

Priority: 1

Key Terms: NORTHCOM, homeland defense, homeland security, Air National Guard, total force, interagency, GWOT, war on terrorism, legal

**5.13. What role does air and space power have in the urban operation environment?**

- What capabilities exist within the USAF that make it uniquely qualified to project air and space power in the urban environment?
- Are the other services better suited to project air and space power within the urban environment?
- Would the 'operationalizing' of unmanned combat aerial systems improve the USAF's capabilities to apply air and space power in the urban environment?

- Does USAF doctrine adequately address the application of air and space power in the urban environment?
- What is the US policy/doctrine with regard to the autonomous application of air and space power in the urban environment?
- What effect will emerging technologies (e.g., directed energy capabilities, persistent area dominance munitions, micro-UAVs, unattended sensors) have on the USAF's application of air and space power in the urban environment?
- Write unclassified lessons learned from operations in Afghanistan and Iraq.

Priority: 1

Key Terms: urban operations, joint operations, UCAV, doctrine

**5.14. How would expansion of UAV assets and other network-centric systems affect spectrum allocation?**

- Examine spectrum allocation for UAVs in a theater.

Priority: 1

Key Terms: UAV, UCAV, bandwidth, transformation, AOC

**5.15. How can allies best contribute to the Air and Space Expeditionary Task Force (ASETF), Combined Air Operations Center (CAOC), space operations and theater defenses?**

- How might allies be included in and contribute to a warfighting HQ?
- What kind of architecture needs to be developed in order to operate the ASETF, CAOC and/or space operations and theater defenses in a coalition environment?
- How would these contributions improve nation-to-nation and military-to-military relations?
- Do recent operations show communication and capability gaps between the US and its allies? How can the capability gaps be fixed?
- Can other states be encouraged to specialize in particular competencies that can contribute to a coalition effort? What is the impact of a state with a particular specialty which does not participate in an operation?
- How do differences in spectrum use affect allies' ability to contribute?
- What can be done to minimize friendly fire incidents in terms of policy, training, CONOPS, and technology?

Priority: 1

Key Terms: allies, AEF, AOC, space operations, theater defense, security consequences, mil-to-mil relations

**5.16. Examine the development of Foreign Area Officers (FAO) and the skills they require.**

- How can FAOs be tasked and assigned?

- How should their skills and abilities be highlighted to make them more visible?
- How can FAOs contribute to Predictive Battlespace Awareness in terms of cultural knowledge and understanding?
- What capabilities can FAOs offer to a commander?
- What skills do FAOs need to be most effective?
- How might they contribute to HUMINT?
- Should there be a dedicated career field for FAOs? What is an appropriate career development path for these personnel? How can their FAOs skills be maintained if it is a secondary duty?
- How could FAOs be used to provide pre-deployment cultural training?

Priority: 1

Key Terms: FAO, HUMINT, personnel, common operational picture, COP, IPB, intelligence preparation of the battlespace

#### **5.17. What should be the USAF role in NORTHCOM?**

- What is the role of the Air Force District of Washington in National Capital Region defense?
- What authorities and policies exist to allow Air Force assets to be tasked?
- How should the Air Force, NORTHCOM, and the Department of Homeland Security interact?
- What USAF assets should be assigned to NORTHCOM?
- How can NORTHCOM best integrate with and support civilian agencies?
- What should be Guard and Reserve roles in NORTHCOM?
- How does First Air Force, as a component of NORAD, relate to NORTHCOM?

Priority: 1

Key Terms: ISR, mobility assets, Air National Guard, Reserves, total force, force protection, BMD, NMD, JFHQ-NCR

#### **5.18. What is the optimum mix of systems to provide robust and reliable communications?**

- Which technologies are best suited for “reachback” communications?
- Which are cheapest? Most survivable? Most reliable?
- What are the bandwidth issues?
- Which technologies are best suited to handle the last mile?
- Evaluate the potential of the following systems: laser communications, space systems, UAVs/high-altitude airships as relay, cellular systems, combat aircraft as relay.
- Is there a network architecture incorporating some or all of the above that is desirable? If so, how should such a system be developed?
- What tradeoffs should be examined in adding on-board processing to ISR and combat systems to reduce communication requirements?

- What commercial systems are likely to be available, and how does this affect this analysis? Can space assets be used as a “CRAF”-like concept?
- What are the costs, both to the military and to the civilian economy if these satellites are no longer available to their civilian customers?
- What commercial systems may be available to an adversary, and how does this affect the types of systems the US should use? What are the security implications?

Priority: 1

Key Terms: commercial space systems, satellite protection, surge capacity, CRAF, communications, imagery, remote sensing, shutter control, C2

**5.19. What is the optimum mix of systems for potential future conflicts to provide robust and reliable surveillance, reconnaissance and gathering of intelligence?**

- What are the most promising technologies for dealing with the WMD problem?
  - What is the tradeoff between air and space platforms?
- What role do ISR assets have in the spectrum of “Find, Fix, Track, Target, Engage, Assess” (F2T2EA)? In which areas of this spectrum is ISR weakest?
- Which technologies are best suited for electronic and signals intelligence? On what platforms or combination of platforms (space, high-altitude UAV, high-altitude airships, and aircraft) should these technologies be placed?
- What is the optimum mix of aircraft, UAVs, satellites, and sensors (optical, IR, laser, multi-spectral, hyperspectral) to provide surveillance and reconnaissance?
- With new radar and sensing technologies on the next generation of aircraft, is space sensing necessary?
- What systems are available to prospective adversaries? If they use these systems, can the US achieve either tactical or strategic surprise, or have we entered an era of transparency in military operations?
- How can/should the US deal with entities that use satellite or other ISR capabilities to aid adversaries?
- Can/should the US purchase all ISR capability (use “checkbook shutter control” to limit an adversary’s use)? Will such a strategy always be possible?
- What are the implications of foreign investments in anti-ISR and other disruptive technologies?

Priority: 1

Key Terms: commercial space systems, satellite protection, surge capacity, CRAF, communications, imagery, remote sensing, shutter control, ISR

**5.20. What are the implications of space situational awareness deficiencies for space control?**

- Should there be a standing plan in response to an attack on US space assets?
- What policies, concepts of operations, and technologies are needed to improve space situational awareness? How can these be diffused across all space sectors?

- How can we tell if a satellite has been attacked? How will the source of the attack be attributed?
- What technologies are available or projected for adversaries and how might they use them against US assets?
- What are the consequences of the loss of space capabilities to the terrestrial warfighter?
- What could current capabilities provide in terms of responses?
- How should the current state of space situational awareness be advanced to better assist operational forces?
- When do/should the systems get integrated, earlier rather than later?

Priority: 1

Key Terms: situational awareness, space control, policy, satellite attack responses

#### **5.21. How should the operations of multiple Intelligence, Surveillance, and Reconnaissance (ISR) platforms be integrated and fused?**

- What is the appropriate C2 architecture for Processing, Exploitation, and Dissemination (PED) of theater airborne ISR assets?
- Where is the best location for ISR PED—in the AOC, via Reachback ops, split-based ops, or another option?
- Is a separate architecture needed for Time-Sensitive Targeting (TST) vice non-TST?
- With limited exploitation assets—facilities, equipment, and personnel—how are the increased demands from multiple, simultaneous operations and platforms handled?
- What is the appropriate C2 structure/relationship for ISR PED assets—especially Reachback PED assets--OPCON, TACON, or Direct Support?
- How does the USAF integrate and capitalize on Joint, Coalition/Allied and Total Force ISR PED capabilities?
- How should commercial assets be better incorporated to compensate for shortfalls in military ISR capabilities or availability?
- Are ‘turf battles’ likely between organizations owning the various platforms?
- Is there a CRRRA panel for ISR?
- Discuss warfighting integration and the CIO.

Priority: 1

Key Terms: ISR, integration, reachback, PED

#### **5.22. What force structure is required for the renewed air defense mission?**

- Examine issues of cruise missile defense, ballistic missile defense, and layered defense generally.
- What have been the changes since 9/11?
- Where does NORTHCOM fit in, and what is its relationship with NORAD?
- What is the current and future mix and the active duty role, since most air defense was handled by the Air National Guard?

- Does the mission have an impact on acquisition?
- How does layered defense (i.e., missile and air defense) of the country drive AF roles, missions, and equipment?
- What is the policy for “shoot down” decisions?

Priority: 1

Key Terms: Noble Eagle, air defense, terrorism, total force

**5.23 Perform a quantitative analysis of the CENTCOM Deployment and Distribution Operations Center (CDDOC).**

- Quantitatively evaluate their performance over the last year contrasted with prior Joint Movement Center (JMC) performance.
- Objectively evaluate the DDOC construct and potentially validate it as a best practice, and then decide whether the DDOC should become part of Air Force and joint doctrine.

Priority: 1

Key Terms: CENTCOM, CDDOC, mobility, organization

**5.24 Evaluate the use of the combatant commander’s Directive Authority for Logistics (DAFL) in OIF/OEF.**

- Should logistics forces be pooled together under the command of a logistics component commander?
- Should Services retain control of their own logistics?
- What’s the appropriate balance between Service and combatant command control over theater logistics?
- Consider a case study of OIF and/or OEF logistics contrasted with Operation DESERT SHIELD/STORM.

Priority: 1

Key Terms: OIF, OEF, C2, logistics, organization

**5.25 Airbase Opening (ABO) during Operation IRAQI FREEDOM (OIF).**

- The transitions from seizure force to opening force to operating force were not smooth, and ABO planning was lacking – what guidance should be incorporated into joint doctrine to address these problems?
- To what degree are these problems attributable to deviation from existing joint doctrine?
- Consider a qualitative analysis in one or more ABO case studies (such as the opening of Talil AB, Iraq).

Priority: 1

Key Terms: OIF, logistics, airbase opening, ABO, AMC, austere bases, access, case study, joint doctrine

**5.26 Air Force support to Army modular transformation—a historical perspective**

- Consider lessons learned from WWII air support to distributed ground operations and apply them to the 2010-2020 timeframe
- Examine Operation MARKET GARDEN and the China-Burma-India theater.
- Use these lessons to frame the discussion of how the Air Force will be required to support post-transformation Army and/or Marine ground operations.

Priority: 2

Key Terms: transformation, logistics, ground operations, AMC, case study, joint doctrine

**5.27 Review and assess the Air Force’s thinking on operational access.**

- How does the Air Force set conditions globally over time for successful military operations?
- Examine enablers like sea-basing and global strike.

Priority: 2

Key Terms: mobility, bases, pol-mil

**5.28 What is “joint air dominance?”**

- What is its history and is it an evolution of air dominance?
- What platforms are optimized for it?
- What is the role for different platforms (F-22, UAVs)?

Priority: 2

Key Terms: systems, doctrine, ACC

**5.29 Examine the destabilizing nature of ground-based lasers targeted at space assets.**

- Do they create crisis instability?

Priority: 2

Key Terms: GBL, counterspace, space operations

**5.30 What is the concept of operations against a country with an integrated directed-energy air defense system?**

Priority: 2

Key Terms: directed energy weapons, DEW, doctrine, IADS

**5.31 What is the Air Force role in the President’s vision for space?**

- If the United States, as well as a competitor, has a permanent presence on the moon will the Air Force have a role?



- Will there be a Coast Guard-like role for protecting space transports?
- Is there military utility to having a permanent manned base on the Moon?

Priority: 2

Key Terms: space operations, NASA, doctrine

**5.32 What technological capability is needed for full space access?**

- What would such access allow the US to do?
- How can the cost of space access be reduced?

Priority: 2

Key Terms: space operations, transformation, acquisitions

**5.33 Review the AEF model for organizing the Air Force and examine alternatives.**

Priority: 2

Key Terms: doctrine, organization, C2, lessons learned

**5.34 What is the right mix of ground, air, and space assets to provide alternate means of command and control of nuclear forces and launching ICBMs?**

- Should an aircraft UHF C2 capability remain?
- Should satellites (MILSTAR) become the primary/only source of emergency action messages and alternate missile launch capability (besides landlines) for the nuclear ICBM force?
- If the UHF is maintained, what is the right CONOPS?

Priority: 2

Key Terms: ISST, SHF, ALCS, C2, organization, Space Command

**5.35 Explore the use of the open source software model for designing Air Force systems.**

Priority: 2

Key Terms: R&D, acquisition, engineering

**5.36 Assess the capability and identify the issues related to using ballistic missiles and production equipment from commercial entities for space launch.**

- What are the legal liabilities to sale or lease of ICBM production equipment?
- What are policy (e.g., arms control) and implementation concerns and how can these be overcome?
- What types of control would need to be in place?

Priority: 2

Key Terms: space operations, Space Command, NASA

**5.37 What are the implications for strategic responsiveness if the Air Force adopted the Configurable Air Transport?**

Priority: 2

Key Terms: mobility, AMC, doctrine

**5.38 Should the Air Force have HUMINT capabilities and if so, what should they provide?**

Priority: 2

Key Terms: intelligence, IPB

**5.39 How should U.S. and international policy/doctrine address the employment of emerging directed energy weapons?**

- With regard to the use of directed energy weapons, what is the relevant policy guidance for the warfighter?
- How does current policy/doctrine affect the warfighter's concepts of employment (CONEMPs) for directed energy weapons?
- Suggest possible changes to policy/doctrine, if necessary, to facilitate the use of directed energy capabilities in the battlespace.
- Will collateral damage from the use of non-lethal directed energy weapons carry the same penalties as those associated with kinetic weapons?
- What will be the public perception of the use of directed energy weapons, like microwave weapons/systems? How will issues of disabling versus killing targets be viewed?
- What are emerging policy ideas in the international community?
- What are the Geneva Convention concerns?

Priority: 2

Key Terms: directed energy weapons, DEW, doctrine, non-lethal, law of armed conflict

**5.40 What role should wargaming, modeling and simulation and other automated tools have in campaign planning?**

- What types of tools do campaign planners want and which would be most useful? What do decision makers want?
- Examine the best industry interfaces. Which are most useful?
- How can wargaming and modeling and simulation contribute to adaptive planning?
- How can/should wargaming and experimentation be integrated into the campaign planning process?

- How should Analysis of Alternatives (AOAs) be done, what tools are needed?
- Discuss the lack of modeling and decision tools for operational tradeoffs (e.g., air versus space).
- How should the impact from the loss of an asset be assessed?
- Develop measures of merit for how various systems contribute to warfighting.
- How can the timelines for developing and obtaining results from wargames be shortened?

Priority: 2

Key Terms: AOAs, wargaming, modeling, programming, lessons learned

#### **5.41 Assess the threat posed by adversaries' use of air and space capabilities.**

- What disruptive technology are adversaries investing in?
- How do other nations intend to use space power (communication, GPS, remote sensing) to facilitate terrestrial warfighting?
- How do other nations intend to use emerging technologies (directed energy, advanced missile technology, advanced air-to-air capabilities, computing, and advanced materials) to facilitate warfighting?
- Will other nations "leap-frog" over US legacy systems?
- Examine adversary acquisition of ISR.
- How could future adversaries mitigate US air and space advantages? What are the ramifications if they do find ways? What low-technology means might adversaries use?

Priority: 2

Key Terms: counterspace, space operations, Space Command, space control, foreign threat

#### **5.42 Assess the domestic and international impact of the US deploying weapons in space.**

- Address overall impacts:
  - Define weaponization and what a weapon is.
  - Examine pathways to weaponization of space.
  - How do we get there from here?
  - Why would we weaponize space?
- Address international impacts:
  - How do adversaries, neutrals, and allies view space weaponization and how would they react if the US deployed weapons in space?
  - What are the international security issues that need to be addressed?
  - How should the US prepare for competition along each pathway and how would we deter adversaries from taking any of these pathways?
  - How might space weaponization impact the freedom of overflight of military, civil, and commercial systems?
- Address domestic impacts:
  - Does space weaponization enhance or weaken domestic security?

- What are the unintended consequences of deploying—or using—weapons in space?
- Should the US move now to take control of the “high ground”?
- What public affairs approach should the US pursue to explain the case for weaponizing space?

Priority: 2

Key Terms: space operations, space weaponization, foreign relations, overflight, commercial, force application, alliance, deterrence, public affairs, legal

#### **5.43 What role could force application from space play in future military operations?**

- Examine the value of space systems in responding rapidly to expected crises in the future (e.g., Space Operations Vehicle, Space Maneuver Vehicle, Common Aero Vehicle, Spaceplane, reusable launch vehicles, space-based weapons, conventional ballistic missiles, and hypersonic vehicles).
- Examine concepts of operation for new space force application systems.
- Examine the relationship between rapid response of such systems and commander’s decision timelines.
- What are the arms control implications of conventional weapons delivered from reusable vehicles?
- Are there significant differences politically between deployment from orbital and suborbital vehicles?
- Could commercial reusable launch vehicles (RLVs) be used to deploy conventional weapons?
- Evaluate results of recent wargames and their lessons for space operations.

Priority: 2

Key Terms: space-based weapons, space operations, conventional weapons, reusable vehicles, arms control, orbital, suborbital, RLVs, hypersonic vehicles

#### **5.44 How do emerging technologies/concepts support effects-based operations?**

- How can joint operations most effectively deliver strategic effects?
- How have precision-guided munitions revolutionized warfare?
- What is the role of space in modern combat?
- What are the logistics considerations for various platforms?
- What are the vulnerabilities of various delivery platforms?
- What is the role of unmanned combat aerial vehicles (UCAVs)?

Priority: 2

Key Terms: effects-based operations, EBO, joint operations, space operations, UCAV, UAV, PGM

**5.45 How can the AF improve its strategic public relations efforts?**

- How can it improve dissemination of the Air Force story?
- What has been the role of embedded reporters in Air Force operations relative to those of the Army and Navy?
- How can the Air Force get information out to the public in timely manner to show the Air Force's role?
- What is the impact on congressional deliberations of defense matters?
- How can the Air Force get its message through to other cultures?
- How can the Air Force best release internal studies on campaigns?

Priority: 2

Key Terms: public affairs, public diplomacy, interagency, strategic communication, legislative liaison

**5.46 What can the AF contribute to the Proliferation Security Initiative? (Also see topic 2.7)**

- How can it contribute to the intercept mission in the air, on land, and at sea?
- Discuss the policy and legal implications of such operations.

Priority: 2

Key Terms: counterproliferation, arms control, WMD, PSI

**5.47 How can the AF support pre-emption in a given scenario?**

- How do AF capabilities support pre-emption, especially with the need for stealth and speed?
- What are the roles for aircraft, C4ISR, and new platforms and concepts, like a conventional ICBM?

Priority: 2

Key Terms: national security strategy, national defense strategy, national military strategy, counterproliferation

**5.48 In terms of divestiture, does the AF have assets it does not need?**

- What stops the AF from divesting these assets?
- What impact is there on modernization from retaining these assets?

Priority: 2

Key Terms: logistics, infrastructure, acquisitions, BRAC

**5.49 What force structure would the Air Force need in order to defend allies in Asia if denied access to regional bases?**

- How does the Air Force ensure regional bases will be available?

- What systems would be useful?

Priority: 3

Key Terms: organization, mobility, pol-mil

**5.50 How should the Air Force do human systems integrations?**

- Examine the programs of the other services.

Priority: 3

Key Terms: R&D, acquisitions, lessons learned

**5.51 Should the Air Force begin to think about using a non-petroleum fuel source, such as nuclear-powered systems?**

- What would be the implications for a propulsion acquisition strategy?
- Should the Air Force be considering nuclear-powered systems for air and space?

Priority: 3

Key Terms: R&D

**5.52 What is the relevance of classic military literature to modern warfare?**

- Examine the relevance of Clausewitz, Sun Tzu, and others.
- Evaluate potential new best practices that are more appropriate to current warfare (4<sup>th</sup> generation warfare, post-modern warfare).
- Evaluate Warden's five rings in the context of lessons from Iraq.

Priority: 3

Key Terms: history, lessons learned, OIF, OEF, doctrine, organization

**5.53 Why are some Air Force assets still high-demand, low-density?**

- Why has the problem not been mitigated?

Priority: 3

Key Terms: HDLD, organization, acquisitions

**5.54. How could and should the Air Force forecast for the distant future?**

- Examine past efforts, such as Air Force Horizons, Air Force 2025, Project Forecast. Are these models?

Priority: 3

Key Terms: modeling, AOAs, lessons learned

**5.55 What is the potential for Air Force personnel to have a part-time sabbatical/telework status for early childhood rearing or other family situations?**

Priority: 3

Key Terms: organization, culture

**5.56 What role does the Air Force have in sea-basing?**

- What should the Air Force be doing?
- How does this Navy concept aid Air Force air power?

Priority: 3

Key Terms: joint operations, doctrine, organization, transformation

**5.57 What role can the Air Force have in influencing other services' transformation?**

- How can the Air Force help? (e.g., working with the Army on Future Combat System implementation)
- How can transformation be inter-service and not only intra-service?
- How can the planning and budgeting of the services be integrated for transformation?

Priority: 3

Key Terms: joint operations, doctrine, acquisitions

**5.58 What was done in the 1947 Key West talks relating to roles and missions?**

- Should similar talks be held today and what roles should the different services have?
- What potential tradeoffs could be made between DOD and others in the interagency (State, NASA, etc.) that would reduce costs while keeping risk at an acceptable level?

Priority: 3

Key Terms: joint operations, organization, pol-mil

**5.59 What are the obstacles and potential solutions to developing joint space doctrine?**

- Survey the current roles performed by the Services and other national organizations in providing national security space capabilities.
- What conceptual, organizational, and cultural impediments exist to developing joint space doctrine?
- How well is JP 3-14, *Space Operations* (August 2002), being implemented? Why did it take so long to produce joint space doctrine?
- What role should the USAF play in resolving these impediments?
- What type of space doctrine is needed to support joint operations?
- If developed, what are the lessons learned, what are future applications?
- Are there significant overlaps if all services are expected to perform all space missions?

- Amplify existing doctrine on command relationships for command and control of space forces.
- Elaborate on the types of support space operators provide as warfighters—general, mutual, close, and direct support—with associated vignettes from recent operational experience.
- Provide a template for an establishing directive applied specifically to supporting space operations.

Priority: 3

Key Terms: Organization, culture, joint operations, doctrine, lessons learned, space

**5.60 How did the Air Force experience with Iraqi no-fly zones (NFZ) affect Air Force performance in OIF?**

- What policy objectives would be best supported by a NFZ?
- Are there viable alternatives to NFZs?
- What are metrics for evaluating a NFZ?
- How could the US experiment with alternatives?

Priority: 3

Key Terms: NFZ, case studies, Iraqi Freedom, lessons learned

**5.61 What acquisition practices should be adopted by the US Government to improve the ability of industry to respond to military needs?**

- What air and space missions should be included in these practices?
  - For space missions this could include spacelift, communications, navigation, imagery, and other areas.
- What level of response is necessary (peacetime versus crisis) and what compensation structure should be employed for crisis response?
- What federal acquisition regulations are applicable and which ones would need to be modified?
- What other acquisition processes used by other entities would be appropriate and how should they be implemented?
- How can the USAF encourage risk taking?
- Conduct a post-Goldwater-Nichols review: how can industry change with changes in the needs of the military?

Priority: 3

Key Terms: acquisitions, space systems

**5.62 Examine the issue of DOD's increased use of commercial off-the-shelf (COTS) technology.**

- What is the proper mix of COTS and military-unique hardware and software for DOD?
- What are the consequences of increased reliance on COTS by DOD?



- What are the pros and cons of using COTS hardware and software?
- What are the implications of sustaining COTS technology and training personnel?

Priority: 3

Key Terms: acquisitions, safety

**5.63 What are the implications of foreign sourcing of defense materials, especially in a changing political environment?**

- How are financing issues handled?
- What might be the effect of shifting alliances?

Priority: 3

Key Terms: commercial space systems, FARs, surge capacity, military needs, acquisitions, pol-mil

**5.64 How can the DOD prevent organizational seams from becoming operational seams in air and space operations?**

- How did the space community respond to the Space Commission and Hart-Rudman Commission?
- What are the issues related to the collision between space vs. warfighter cultures?
- Examine AEF, active-reserve component, and regional command organizational seams.
- Under what conditions might it be appropriate to consider a separate Space Force?

Priority: 3

Key Terms: organizational seams, organizational culture, space, warfighter

**5.65 Discuss how US export policies could endanger US national security.**

- Assess US options for export control of militarily-significant technologies.
- What is the impact of the increasingly multi-national character of defense industries?
- What are the issues that confront DOD as it considers strategies to either shape the commercial environment or adapt to its influences in a way that is most beneficial to national security interests?
- What are the intellectual property issues involved?
- What is the impact of foreign students and companies in the US?

Priority: 3

Key Terms: space commerce, international regulatory regimes, competition, insurance, export control, financial markets, DOD, arms control, nonproliferation

**5.66 Describe alternative strategies for resourcing air and space systems through cooperative, leasing, or financial reimbursement arrangements.**

- What capabilities could the military divest to the civil or commercial sectors?
- Assess various divestiture strategies.
- What impact would such policies have on the funding of future air and space systems?
- How are cost differences between military-supplied air and space and out-sourced air and space assessed? (airlift, bandwidth, support services, ISR, security)
- Examine international experiences with such arrangements.

Priority: 3

Key Terms: resourcing, divestiture, leasing, out-sourcing, air and space systems, acquisitions

**5.67 What are the key personnel issues facing the Air Force?**

- Examine such issues as:
  - Combat training for support personnel
  - Airman filling traditional Army roles
  - End-strength: what is proper force size, given changing missions (e.g. air defense)
  - The mix between the active force and the reserve component
  - The “blended wing” concept
  - Total force retention in face of high OPSTEMPO
  - Balance between active and reserve component in terms of benefits
  - Recruiting and retention in high skilled technology areas – Does the Air Force compete with private industry or outsource instead?

Priority: 3

Key Terms: personnel, total force, recruiting, retention, OPSTEMPO, PERSTEMPO

**5.68 What are the C2, logistics and other issues involved with rapidly setting up new austere bases?**

- Consider decisions to move “iron first” (i.e. establishing combat operations before base operations support (BOS)).
- What are the challenges of sustaining austere bases?

Priority: 3

Key Terms: logistics, access, expeditionary, civil engineering, lessons learned, case studies, bare base

**5.69 The Joint Estimate Process and military history.**

- Examine the historical record of military planning and establish the applicability (or lack thereof) of this process to military history in general and to the history of air and space power in particular

- Establish the advantages or disadvantages of its various steps

Priority: 3

Key Terms: lessons learned, case studies, joint doctrine, planning

#### **5.70 Effects-Based Operations (EBO) in Low Intensity Conflict / Operations Other than War / Stability Operations.**

- Examine the current and historical record and evaluate the applicability of these EBO principles to lower-intensity conflict, conflict other-than-war, and to stability operations following major combat.
- Explore concrete examples of how the principles of EBO apply to (or don't apply to, or are especially applicable to) the conduct of lower-intensity conflict and the conduct of operations after major combat operations have concluded.

Priority: 3

Key Terms: lessons learned, case studies, joint doctrine, planning, SASO, MOOTW, post-conflict, OIF, OEF

#### **5.71 Effects-Based Operations (EBO) in military history**

- Analyze one or more of the EBO principles set forth in AFDD 2, present historical instances in which these principles have been employed, and examine the results thereof.
- Consider in particular examples in the history of air and space power.
- Examine cases where the principles have been misunderstood or misapplied.

Priority: 3

Key Terms: lessons learned, case studies, joint doctrine, planning, doctrine

## **6. INFORMATION OPERATIONS AND WARFARE**

*(Also see topics 3.40, and 3.62)*

### ***Doctrine, Definitions, and Conceptual Issues***

#### **6.1 Analyze the DOD role in protecting the United States National Information Infrastructure.**

- Summarize existing national and DOD guidance (e.g. PDDs, national plans, DOD directives).
- Conduct a deficit analysis between infrastructure threats and existing protection programs.
- Analyze possible new approaches to protection of the national infrastructure, and how to address the threat.

Priority: 1

Key Terms: IO, IW, NII, Defending America's Cyberspace, Homeland Defense

#### **6.2 What are the implications and issues surrounding IO and Homeland Defense?**

- What are the areas of IO that could have a beneficial impact on Homeland Defense?
- What are the legal and ethical limits that must be taken into consideration?
- What are the proposed procedures for implementing an IO campaign within the Homeland Defense arena?

Priority: 1

Key Terms: IO, Homeland Defense

#### **6.3 Are all Information Operations in essence Influence Operations with the common goal of gaining and maintaining Information Superiority?**

- Does the AF IO Doctrine adequately define IO?
- What are the appropriate military elements of Influence Operations for AF/Joint Operations (Military Deception, PSYOP, OPSEC, PA, Civil Affairs)?
- Are Influence Operations more appropriately at the top of the hierarchy (of Information Operations) with Electronic Combat Operations (EW) and Network Operations (CNO) as subordinate mission areas within a measurable environment (Electromagnetic Spectrum and Cyberspace)?

Priority: 2

Key Terms: IO, IW, EW, CNO, EBO, C2W, OPSEC, Targeting, Influence Operations, ISR

**6.4 Higher level IW effects are include actions to Destroy, Deny, Degrade, Disrupt, Deceive or Influence targets. What are key considerations that must be planned for to synchronize and deconflict those effects?**

- What is the definition or unintended consequences or “blowback” in relation to IO actions?
- How can Intelligence Gain/Loss considerations be factored into the targeting process to best serve the needs of both ISR personnel and targeteers?
- What collateral damage considerations are unique to IW? Consider non-kinetic/non-lethal options.
- How important is the consideration of compromising a special capability to the IW campaign? Is their a risk-analysis model that can be applied to use of special capabilities to mitigate compromise?
- How can IW effects be embedded in the ATO to insure integration and to comply with the concept of parallel and simultaneous operations? Is the use of a “shadow” IO Tasking Order valid to protect use of IW capabilities, but to synchronize IW effects with kinetic ATO events?

Priority: 2

Key Terms: IO, IW, EBO, ATO, C2W, targeting, ISR, Influence Operations

**6.5 What are the implications of arms control in the IW realm?**

- How would an equitable arms control agreement be defined? What benefits might accrue? How are USAF equities protected?
- How are other IW powers’ technological advances anticipated and addressed?
- What arms control mechanism(s) and forum/fora would be most appropriate for IW arms control? Is it possible to track/identify foreign IO/IW technology capabilities?
- How would the US Government identify, vet, and publish such a foreign “IW Militarily Critical Technologies List?” Given the short life cycle and rapid evolution of IO technologies, is this feasible given the existing bureaucratic processes?

Priority: 3

Key Terms: IO, IW, arms control, CNA, CND, IW agreements, critical technologies, proliferation

**6.6 Should the US develop a declaratory policy regarding the use of its IW capabilities?**

- Declaratory policies with respect to the use of nuclear, chemical and biological weapons exist in many forms that sometimes seem contradictory, (e.g., US has a no-use policy regarding CBW, but does not have a no first use policy regarding nuclear weapon).
- What specific lessons can IW learn from history with such policies for the use of NBC weapons? What facet of the weapons makes these lessons applicable to IO (e.g., controllability of effect, extent of collateral damage, risk of escalation, proliferation and technology transfer, force structure)?

- What national objectives can be best served by vagueness or explicitness on the subject of IW capabilities and our willingness to use them?
- How would such policies affect the contribution of IW to deterrence, both regionally and globally
- Should the US develop a national or DOD policy to limit a potential adversary's access to IW technologies? Assuming a critical technology list is available, how would verification and enforcement be done?

Priority: 3

Key Terms: IO, IW, Policy, SIOP, deterrence, first use, declaratory policies, critical technologies, proliferation, CNA, CND

#### **6.7 How will evolving IO affect traditional deterrence and escalation dilemmas during international crises?**

- What advantages does information dominance give during crisis negotiations?
- How have information advantages been used to intimidate crisis adversaries?
- Does information asymmetry make escalation to war more/less likely?
- Do evolving IO make it more/less difficult for civilian principals to control military affairs under crisis conditions?
- What role can IO play in improving international crisis outcomes?

Priority: 3

Key Terms: IO, IW, Crisis management, deterrence, escalation

#### **6.8 Review and analyze rules of engagement (ROE)/Laws of Armed Conflict (LOAC) for offensive IW.**

- How do LOAC apply, especially in relation to effect on civilians?
- How do LOAC concepts, such as "proportionality," "collateral damage," "humanity," "chivalry," apply in the context of offensive IW?
- What ROE issues must be considered during a conflict that contains a technology-based IW component?
- How should we devise effective ROE to respond to cyber-attack?

Priority: 3

Key Terms: IO, IW, LOAC, ROE, operations, operational law

#### **6.9 Discuss the similarities and differences between Joint and Air Force IO doctrine, and how the organizational structures interface?**

- Air Force doctrine diverges from Joint doctrine. Has this divergence helped or hurt IO efforts in the Air Force and in the Joint arena? Examine recent/current operations to help answer this question.
- Examine utility of Information in Warfare construct. Is there any utility of distinguishing IO and IW based upon conflict vs. non-conflict timelines?

- Discuss the nature of confusion due to lexicon differences and its effect on the US, its allies and its adversaries.
- How do organizations that utilize both doctrines cope with the differences? Again, examine current conflicts and/or Joint exercises to help answer this question.

Priority: 3

Key Terms: IO, IW, Doctrine

## ***OPERATIONS ISSUES***

### **6.10 What unintended consequences (or “blowback”) could result from the employment of computer network attacks (CNA)?**

- Would the purported deniability or non-traceability of electronic attacks prevent attacked societies from focusing on the originating country or group?
- Just as traditional US military capabilities have shown a clear progression away from mass effects against societies and toward precision effects against military capabilities, should IW policy and capabilities, if/when developed, focus on precision rather than mass information effects?
- What is the effect of large-scale CNAs that address civilian infrastructure and defense issues? What are the policy issues associated with these various scenarios?
- How does the unpredictability of the “weapon” create law of armed conflict (LOAC) issues?

Priority: 1

Key Terms: IO, IW, LOAC, law of armed conflict, unintended consequences, policy issues, CNA, blowback

### **6.11 How can we improve IO in a coalition/allied environment?**

- How do security concerns and improved technologies impact IO in a coalition/allied environment? What do/don’t we share or disclose? How do we overcome these concerns? How does this issue relate to homeland defense?
- Do current Concepts of Operations need to be changed? How?
- How have allies such as the UK or NATO handled IO better? Examine the concept operations for allied Public Information Officers in relation to US Public Affairs Officers.
- Analyze real world and exercise examples of successes and failures of IO operating in a coalition/allied effort.

Priority: 1

Key Terms: IO, IW, coalition, security, homeland defense

**6.12 How do we measure nation-states'/non-state entities' levels of vulnerability to IW?**

- What are measures of effectiveness (MOE) in an IW campaign? Which elements of IW can be quantified via MOE?
- Does the US do too much “mirror-imaging”? What models can be used to avoid errors made by mirror-imaging?
- Examine portions of a potential adversary’s infrastructure. Include insights on why categories were chosen, application to other analysis, and potential interrelationships between categories.
- How do we determine the key nodes/centers of gravity (COGs) in an adversary’s information infrastructure? What models are useful in determining nodes/COGs for Influence Operations?

Priority: 1

Key Terms: IO, IW, vulnerability, mirror imaging, infrastructure, COG, targeting, Influence Operations

**6.13 What are measures of effectiveness (MOEs) for IW, or one of its disciplines?**

- What are ways to measure IW contributions in terms of denying data, information, knowledge, understanding, and operational wisdom?
- How can the Unified Joint Task List (UJTL) MOEs be used as a foundation for more sophisticated MOE development?
- Can Joint Munitions Effectiveness Manuals (JMEMs) be developed for IW?
- What do commanders expect of IW and how can those expectations be measured?
- How can IW MOEs be validated?
- What are some MOE categories (e.g., planning process, programmatic, logistical, time, damage, perception management, etc.)?
- What are ways to conduct IW combat assessment (like battle damage assessment)?

Priority: 1

Key Terms: IO, IW, measures of effectiveness, Universal Joint Task List

**6.14 What is the effect of international media on US military operations and on IW/IO planning?**

- Citing case studies as examples, discuss which IW/IO means were most important for a given side in a particular conflict.
- How should the AF and DOD implement the provisions of PDD-68
- How should the AF and DOD provide international public information?

Priority: 1

Key Terms: IO, IW, media, IO planning, Kosovo, Serbia, Afghanistan, Iraq



**6.15 What is the interrelationship of themes between Public Affairs (PA), Psychological Operations (PSYOP), and Military Deception (MD)?**

- In an Information Warfare Flight or a Joint Force Commander IO Cell how are PA, PSYOP and MD themes coordinated and deconflicted effectively?
- What is a workable definition of Influence Operations?
- Who are the key audiences for PA, PSYOP and MD? Is there a concept of acceptable collateral (media) damage if a message is received by the wrong audience?
- How can PA maintain “integrity and credibility” while working with PSYOP and MD?
- Discuss the separation between Public Affairs (counter-propaganda) aimed at a US audience vs. activities directed at foreign and/or hostile audiences.
- What is the advantage gained by combining PA, PSYOP, MD and OPSEC under a coordinated planning effort?
- What are the lessons learned from post 9/11 experiences in Afghanistan or Iraq that support

Priority: 1

Key Terms: IO, IW, deception, PSYOP, propaganda, public affairs, media, international

**6.16 Are Effects-Based Operations (EBO) another name for Command and Control Warfare (C2W) or Influence Operations?**

- What new concepts to Information Warfare (IW) are brought to the table by EBO not already part of the definition of C2W and nodal targeting or current AF/Joint concepts of IW?
- How do you categorize lethal and non-lethal weapons and kinetic/non-kinetic effects in relation to EBO?
- Analyze AFDD 2-1.9, AF Targeting Doctrine, in relation to EBO and IW effects.
- EBO have been defined as “coordinated sets of actions directed at shaping the behavior of friends, neutrals, and foes in peace, crisis, and war. What are the differences/similarities from ‘Influence Operations’ under consideration for inclusion in DoDD 3600.1, JP 3-13 and AFDD 2-5?
- Are Information Operations required as a separate planning function if all operations are planned with vertical and horizontal integration of Effects-Based Operations?

Priority: 2

Key Terms: IO, IW, EBO, C2W, Targeting, Influence Operations

**6.17 How does IW contribute to full-dimensional force protection (critical nodes of personnel, facilities, equipment and technologies)?**

- What new critical infrastructure protection processes/procedures/measures need to be introduced to counter the possibility of hostile activity?
- What IW-related analytical or decision-making tools does the air commander require to ensure force protection?

- What commercial off-the-shelf (COTS) or emerging technologies, media resources, and human factors analysis would enhance force protection efforts?

Priority: 2

Key Terms: IO, IW, force protection, COTS, human factors, media

#### **6.18 What tools do commanders need to conduct IW at each level (IW Flight/CC, JTF, CINC)?**

- How are the tools linked together? How could/should other links be made?
- Discern commanders' requirements for automated or semi-automated IW mission planning tools and common operating pictures (COPs).
- What tools would help ensure that the commander is considering all targeting options (kinetic/nonkinetic, lethal/nonlethal)?
- How can advanced technology, human factors, and human computer interaction understanding be used to enhance these tools?
- How can the need for these tools be translated into operational and acquisition requirements?
- How can education and training programs be used to effectively integrate these tools with force protection and other related base operations?
- How can visualization of IO/IW activities be most usefully integrated with other information presented to the commander?
- What measures of effectiveness would be embedded in such a visualization/map?

Priority: 2

Key Terms: IO, IW, mission planning, targeting

#### **6.19 How can Psychological Operations (PSYOP) be used most effectively in support of air and space activities?**

- What does psychological preparation of the battlespace (P2B) entail, from both an operational and conceptual standpoint? How should P2B be conducted at the strategic, operational, and tactical levels?
- How can PSYOP be folded into the target development and selection process in support of joint or combined air combat operations? How does PSYOP fit into the effects-based operational framework? What is the Air Force role in the JPOTF of tomorrow?
- What role(s) should PSYOP expeditionary teams (PETs) play during air contingencies and EAF deployments?
- What is the synergy between PSYOP and DOD Influence Operations activities (e.g., public/civil affairs)? How can this synergy best be achieved and optimized?
- What is the synergy between PSYOP and human-factors analysis? How can this synergy best be achieved and optimized? What commercial off-the-shelf (COTS) or emerging technologies could be harnessed to enhance DOD's PSYOP capability?

Priority: 2

Key Terms: IO, IW, aerospace PSYOP, P2B, PETs, human factor analysis, COTS, Influence Operations

**6.20 What should the role of public affairs (PA) be in IW?**

- The Air Force Chief of Staff has directed PA participation in IW Flights (IWF). What role should PA have in these Flights?
- How will PA contribute to the synergism of IW?
- Examine PA/Command IW relationships.
- What type of "public affairs strategy" should we pursue in respect to defending the national infrastructure, DOD and AF against potential IW attacks?
- What type of public affairs strategy should be created to educate the public in the consequences of attack? Examples might include: crashing the FAA air traffic control network (possibly bringing down airliners filled with innocent civilians); shutting down the US power grid (causing civilian casualties); interfering with 911 networks, sending emergency vehicles to the wrong locations?
- What is the role of AF public affairs in cases where general attacks against civilian infrastructure impacts AF operations?

Priority: 2

Key Terms: IO, IW, public affairs, PSYOP, information infrastructure

**6.21 How will continuing rapid changes in technology affect IW?**

- How will changes in global telecommunications, embedded devices, increasing bandwidth, etc., affect the use of IW by potential adversaries?
- How will the increasing pace of technological change affect our ability to defend against IW? How should these improved technologies be used in conjunction with our allies? What concerns exist regarding foreign military sales or the possible compromise of technology?
- Bandwidth limitations have traditionally constrained information delivery to warfighters. With increasing bandwidth available, what useful information should be added and what are ideas for displaying information more intuitively? Should some of the new bandwidth be spent to strengthen encryption?

Priority: 3

Key Terms: IO, IW, advanced technology, technology forecasts, technology

**6.22 How will continuing rapid changes in human factors analysis affect IW?**

- How can new precision profiling techniques, including speech pattern analysis, lie detection, etc., be used in deception and psychological operations campaigns?
- How can cultural studies assist IO campaigns?
- Address the use of human conditioning for exploitation of EW, CNA, OPSEC.

Priority: 3

Key Terms: IO, IW, human factors analysis, behavioral analysis, EW, PSYOP

**6.23 What constitutes a complete IW campaign? For us and/or against us?**

- Does IO/IW conditioning of adversaries and allies improve the pre-hostilities environment?
- Is it possible to determine specific start and stop dates, or is IW continuous?
- How is the end-state defined in an IW campaign?
- Should there be an IW task force set up?
- What are the phases of an IW campaign? Where do they synchronize with conflict operations?

Priority: 3

Key Terms: IO, IW, campaign end, end state, task force

**6.24 Examine the role of maneuver in cyberspace.**

- By changing addressing schemes, communications protocols, and their means, the cyberspace location of assets can be changed. Such changes offer the opportunity for maneuver in cyberwarfare.
- How can maneuver concepts improve AF/DOD ability to conduct computer network defense (CND)?
- How can one measure the disruptive effects of defensive maneuver on AF/DOD ability to communicate?
- How do maneuver concepts in cyberspace relate to those in other realms?

Priority: 3

Key Terms: IO, IW, cyberspace, maneuver, space

**6.25 How can the USAF IO and information technology capabilities be applied best in environments associated with Military Operations Other than War (MOOTW) or small-scale conflicts (SSC)?**

- Apply real world case studies and multiple analytic approaches in addressing this issue. Address successes and failures as appropriate.
- Do our current TTPs, CONOPS, etc., correctly address how we should apply IW during conflict?

Priority: 3

Key Terms: IO, IW, MOOTW, SSC, Kosovo, aerospace power, Mogadishu, Afghanistan

**6.26 How can the Air Force develop PSYOP capabilities and integrate them into a Joint IO environment?**

- What is the best means for the AF to ensure JPOTF takes Air-centric IO/PSYOP requirements (themes) into consideration?

- How can Commando Solo be better utilized as a non-SOF IO platform vs. a SOF PSYOP platform?
- What AF educational requirements can be created to ensure better PSYOP and Joint integration?

Priority: 3

Key Terms: IO, IW, PSYOP, JPOTF, Commando Solo, education

**6.27 Compare Economic, Political, and Religious media reports in the Western and Muslim media. Can the Muslim Arab/Arab media be useful to in supporting US policies and objectives?**

- Compare Arab Arab/Muslim media reaction to critical US policy/strategy plans.
- What have been the repercussions of US reactive responses to Arab/Muslim media?
- Compare the credibility and effectiveness of Muslim media with the regional audience, the US audience, and the world audience.
- Can US media be a positive force in Arab/Muslim relations?
- Would Arab/Muslim lead reporters and anchors improve the US image and assist US objectives?
- How do AF efforts fit in with DOD and national efforts to conduct international public information efforts and ensure national will in support of USG policies and objectives?
- How do AF commanders use public affairs and linkages to IW capabilities to negate or mitigate the negative impact of adversary propaganda on AF personnel?

Priority: 3

Key Terms: IO, IW, propaganda, public affairs, international

***Defense Operations Issues***

**6.28 How should IW address the risk management issue for IO preparation of the battlespace (IOPB)?**

- Is risk management properly addressed in current IW TTPs? What changes if any are needed?
- How do we determine the level of acceptable risk?
- Are current Multidisciplinary Vulnerability Assessments (MDVA) acceptable tests to determine if risk management procedures are appropriate?
- Do the Operational Risk Management procedures used to design the INFOCON process also apply to the other disciplines of defensive counter information?

Priority: 2

Key Terms: IO, IW, defensive counter-information, risk management, IO vulnerabilities, TTPs, operational planning, Multidisciplinary Vulnerability Assessments, IOPB

**6.29 Explore concept of computer network exploitation (CNE)/“Active Defense.”**

- Define concept of CNE/“active defense” in cyber-warfare and how it is distinguished from related CND, Computer Network Attack (CNA), and Info Assurance activities.
- What advantages does having authorization and capability to conduct CNE/“active defense” as part of CND provide? What are the implications of not having authority?
- What policy and legal considerations apply to CNE/“active defense” and the establishment of ROE for its prosecution?

Priority: 2

Key Terms: IO, IW, CNE, active defense, legal, cyber-warfare

**6.30 What are the ramifications of hostile IO/IW threats to the US, its forces, and allies?**

- Analysis of key strategic and operational IW threats to the US past and present.
- Include nation-state and non-state-entity operations.
- Possible deterrence of such activity.
- Future implications.
- Include case studies.

Priority: 2

Key Terms: IO, IW, deterrence, anti-US, political-military, public diplomacy, terrorism

**6.31 What lessons can be learned from the private sector regarding defensive IW?**

- What are the similarities and differences in the challenge of protecting the information resources of globally dispersed operations?
- How does a large, geographically dispersed organization identify, protect, and defend its most critical information assets?
- What is the best mix of centralized/decentralized protection and reserve/backup paths and systems in defending the most critical information assets?

Priority: 3

Key Terms: IO, IW, defensive IW, lessons learned, private sector, commercial

**6.32 Compare and contrast TTPs for IO/IW across the Services and Joint community.**

- Address best practices for the Joint community
- Identify the cross-Service synergies.
- Are the TTPs deconflicted?
- Recommended changes for any/all TTPs.
- Are the JULLS appropriately applied during exercises, contingency operations, in TTP development, and in IO/IW execution?

Priority: 3

Key Terms: IO, IW, TTPs, JULLS, Joint

(NOTE: Research of this topic may require the use of classified sources.)

**6.33 How can DOD and the Air Force go beyond computer-focus within the Information Condition (INFOCON) system to a full-spectrum IW focus?**

- Is it possible to broaden scope so widely?
- What is the utility of moving to a full-spectrum focus?
- What organizational relationships need to be formed to make this happen?
- What are the necessary reporting chains and means to ensure compliance?
- What indications and warning data are necessary to expand to a full-spectrum threat condition?

Priority: 3

Key Terms: IO, IW, INFOCON

***Organizational Issues***

**6.34 How can you build an IW capable force?**

- Examine total force capabilities.
- Should a person be trained in all aspects of IW or should they specialize?
- Should we train to Joint or Service standards/doctrine?

Priority: 2

Key Terms: IO, IW, information warrior, standards, training, entrance testing and exams, AFSCs, Air Force Reserves (AFR), Air National Guard (ANG), ARC

**6.35 Examine the possible roles and responsibilities of Air National Guard and Air Force Reserve units in IO.**

- What IO roles and missions should the reserve components assume? (Include homeland defense missions in the analysis.)
- What units might be formed or slots created which will enable the United States to better utilize its IO-trained resources?
- How can their capabilities be better integrated into Total Force capabilities?

Priority: 2

Key Terms: IO, IW, Air National Guard, ARC, Reserve, National Guard

**6.36 IO is conducted in a distinct battlespace. What type of organizational structure is best suited to accomplish the IO mission?**

- Who should have the national IO lead?
- How do you best integrate and synchronize the diplomatic, informational, military, and economic (DIME) aspects?

- How does the Interagency Working Group structure feed the Joint Force Commander IO Cell? How does it feed Strategic Command?
- Should there be a new model for conducting IO, such as an “IO Combatant Commander,” MAJCOM, or IO Task Force? What roles would each organization have? What should the organization look like?
- How does Strategic Command conduct command and control of IO? Who has the decision authority for CNA, PSYOP, and Special Information Operations? How does this organization interact with the Services? What would be their individual responsibilities?

Priority: 2

Key Terms: IO, IW, force structure, information infrastructure, C2, command and control, Strategic Command

**6.37 CORONA 98 established AF Information Warfare Flights (IWFs) at Numbered Air Forces in order to provide IW support to the NAF Commander. Currently, CORONA-directed IWFs exist at 7AF, 8AF, 9AF, 12AF, PACAF, and USAFE and are AOR-oriented. HQ USAF/XOI approved additional functionally-oriented IWFs at 1AF, 14AF, AMC. What has been the overall effectiveness of each IWF, as judged by their supported command, since their inception?**

- Is the IWF the best way to leverage IO capabilities in a given theater?
- Do all IWFs have enough unique mission to justify their funding, staffing and existence?
- If IWFs are deemed necessary, do IWFs require specified AF training, or could already existing joint IO training suffice?
- What is the relationship between the IWFs and Joint IO organizations?
- Could the current IWF tasks be better accomplished via Joint IO organizations?
- When deployed in support of operations, what is the best way to leverage IO capabilities?

Priority: 2

Key Terms: IO, IW, IWF, organization

**6.38 What role is assigned to Network Operations Security Center (NOSC) personnel embedded in the Information Warfare Flight or within the Information Warfare Team within the Air Operations Center (AOC)?**

- How does the NOSC insert within the Air Operations Center (Falconer AOC manning) interface with the Air Force Computer Emergency Response Team (AFCERT)? Is there a better construct than embedding NOSC trained personnel with the IW Team?
- What is the NOSC insert/AOC interface with the Joint IO Cell and Joint Task Force-Computer Network Operations?



- Analyze the AF role in protecting the United States National Information Infrastructure (NII).

Priority: 3

Key Terms: IO, IW, NII, Defending America's Cyberspace, homeland defense, AOC